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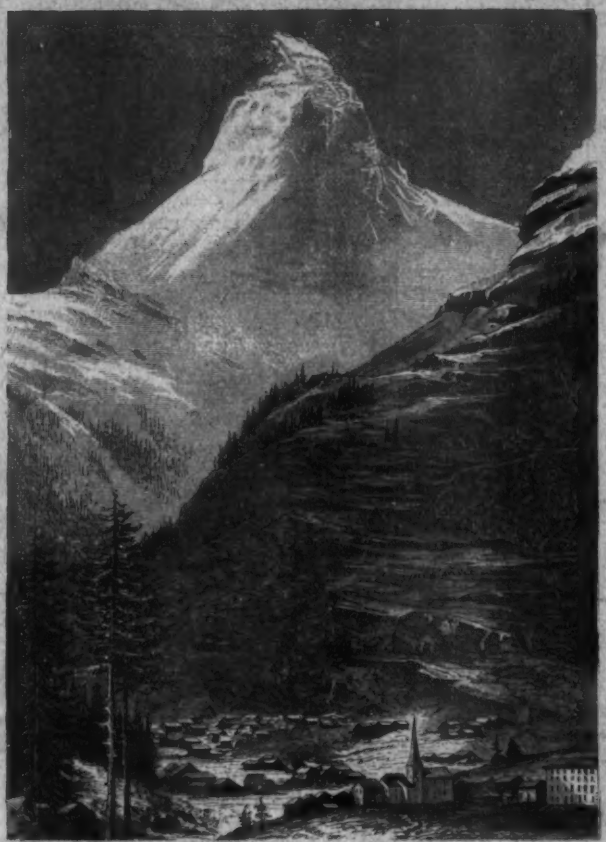

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FOR THE SCHOOL-ROOM AND THE STUDY

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EDUCATION IN PARLIAMENT—JUNE.

THE House of Commons swelters—swelters, in spite of its stony carapace—under a midsummer sun. Pantingly the honourable members look forward, apprehensive, to the coming weeks, and all the bills and debates that lie ahead; and they shiver with, so to speak, a hot shudder at the prospect of a torrid battle, through many all-night sessions, over the Education Bill.

For that is what it means, if the Education Bill is to go on. Prolonged discussions, numberless amendments, sterile debates, the closure applied every two hours—the sun rising over the Terrace, while inside the joust of argument and the hot march through the division lobbies go on. The Bill, if it is to be carried, must be carried verbatim—the doctrine of verbal inspiration, not a jot or tittle of alteration allowed, the ruthless use of the party machine, steadily grinding the measure through; for if a single amendment in committee be accepted by the Government, another stage in debate—the report stage—will be added, and the process would begin all over again. And then, at the end of all, a Bill would have been carried which nobody cares a penny to have. The Bill stands without friends or real supporters; even its few advocates talk about it as a "skeleton" Bill to be clothed.

But the process of clothing the dry bones is just what the Government cannot afford time for. The Government's only chance of getting the Bill this session would seem to be to refuse all additions and even all omissions in the Bill. Even the one concession which the Government were said to be prepared to yield, that of removing the twopenny limit of rating under the Bill, has probably become impossible to them; for the Central and Associated Chambers of Agriculture, and the County Councillors who are M.P.'s, are up in arms against that. And the same august and agricultural body are opposed to any alteration in the Bill which would make *all* the whisky money to be applied—not to be "applicable"—to the schools. So that even the smallest amendments, to which most men in the House of Commons would assent, are likely to meet with opposition on the Government side; and opposition means time, and "time is of the essence of the situation." What is a poor Government to do?

During the Whitsun recess, opinion in the country has been surging up against the preposterous little measure. Educational and progressive feeling generally has endorsed the condemnation uttered by Mr. Yoxall straight off, within half an hour of Sir John Gorst's plausible introductory speech. Up in the Press Gallery we dug our pens into Mr. Yoxall for taking the bold and unusual course of damning right off a Bill which he had not seen in print. Mr. Bryce's balancing speech commended itself to us more; it was the usual and proper parliamentary thing. But now it appears that the front-bencher was wrong, and the rank-and-filer right, in the opinion of educationists throughout the country. And the gallant efforts of Mr. Gray to get the Bill enlarged and amended by the Government itself have only so far resulted in a letter from Mr. Balfour which indicates an amending and enlarging intention—for some other Bill, in some other session. "Swallow the bird in hand first," says Mr. Balfour, "and wash down the feathers with the wine of hope, keeping hopeful eyes on the brilliant plumage of the birds in the bush."

For COOK'S VACATION TOURS

SEE BACK PAGE OF COVER.

It is true that the Archbishop of Canterbury, that good old fossiliferous educationist, has blessed the Bill with bell, book, and candle, and that the Bishop of Manchester has—somewhat reluctantly, though—acted as acolyte to the All Primate. But the prospects of the measure are not a penny the better for that. When Parliament opened again, the demand for a Bill to give the School Boards the *status quo ante* Cockerton had grown and swelled into an utterance quite thunderous. The Board of Education had written to the Liverpool School Board a letter deprecating the projected closing of Liverpool day and evening continuation schools. The Macclesfield School Board had decided to go on with their continuative work, Cockerton notwithstanding; and here and there a School Board member, timorous of signing cheques, had been elbowed aside by others more in earnest, who seized the pens and dashed off their autographs, and cried, "Let 'em surcharge me if they will." There are said to be two Hampdens of the kind at Cardiff, too. Which is probably just what the speech of Mr. Yoxall at Festiniog was intended to evoke. On the eve of the reopening of Parliament, and on the day of reopening itself, great conferences against the Bill had been held in London; the Three were busy addressing public meetings up and down the country; and the National Union of Teachers was using the force and skill of its unique organisation against the present Bill.

"Amend the Bill," the Executive had said—"amend the Bill, or give it no second reading." The branches of the National Union of Teachers had spontaneously come to the same conclusion. The leading reviews, the *Fortnightly* and *Contemporary*, had published articles on the Bill that damned it with faint praise in one case and "slated" it in the other. *The Nineteenth Century and After* drove a spear into the Bill. There won't be much "after" the nineteenth century for the glory and primacy of Great Britain in commerce and industry, if Education Bills of this type are to be the fine flower of parliamentary wisdom. *The Times* expert had columns of severe criticism for the Bill, and subacid comment on the Government's policy regarding education were published in the Thunderer. *The Spectator*, most learned and able of Governmental organs, scratched the Bill's face, and belaboured the Ministry for introducing it. And, on the day of Parliament's reopening, *The Standard* came out with a leading article almost plainly suggesting that the Government should drop all but the "Cockerton" clauses of the measure. These are inauspicious omens for the Bill, and the augurs are shaking their heads. But Sir John Gorst goes about the Parliament House busily, seeking an opportunity for the second reading to come on.

Just before the House of Commons separated, with a war-whoop, for the holidays, several questions were put to the Government as to when they meant to keep their promise by introducing a Bill to give to teachers in public elementary schools some mode of protection against wrongful dismissal. And directly the honourable members faced Mr. Speaker again, the same question was thrice put. Mr. Balfour promised a reply on Tuesday the 11th of June. That was the day on which he was to announce what Bills the Government would discard for the first batch of slaughtered innocents this session. And everybody expected that on Tuesday the 11th of June the First Lord of the Treasury would give some inkling as to what is to happen to the Education Bill. A good deal depended on Mr. Balfour's dictum that day. There were some who thought that Mr. Balfour was capable of playing off one Bill against the other by saying, "Unless you teachers stop opposing our Education Bill, you shan't have the promised Bill on tenure of office." There are harsh critics of the Government who seem to think that the Government are, as a French writer said of a certain Scripture worthy, "*capable du tout.*"

Tuesday the 11th of June came round, and Mr. Balfour showed that, whatever the faults of the Government in education may be, they cannot be guilty of conduct so mean and huckstering as that. He told the House of Commons that "the Vice-President of the Board of Education proposed to introduce a Bill on the subject of the dismissal of teachers in elementary schools," and the members on both sides of the Speaker's chair received the announcement with cheers. Here is another proof of the strength of the parliamentary influence of the teachers. The danger is not that the teachers' influence in Parliament should be weak, but rather lest it should come to be regarded as proportionately too strong. Nothing succeeds like success, except envy.

Mr. Balfour, in rather a tentative way, announced that the Education Bill was still alive; it is saved from the first fell onslaught of the massacre of the innocents. But its life is by no means assured: it stands in a parlous position; its existence hangs on a thread. And when Sir Henry Campbell-Bannerman sat down, after his reply to Mr. Balfour, he had made it plain to a glum Government bench that the Education Bill, if ever it faced the House of Commons, would have to meet the slings and arrows of outrageous fortune. Sir John Gorst was absent from this scene; he was even absent from the answering of questions, two of which were to have been addressed to him. Sir John does not seem to get happier or more at ease in his mind, and his love for the Three increases but very slowly.

Perhaps by the time these lines are issued in print the fate of the Education Bill will be clear. It stands behind the Budget Bill, the Loans Bill, and the Agricultural and Tithe Rating Bill, in the order announced by Mr. Balfour. The ebbing tide of parliamentary time is like to leave it stranded. Common decency causes it to be kept on the programme a little longer. But up in the Press Gallery we regard it as almost moribund. The Bill is still alive, and that is all that its best friends can say of its condition. The Association of Municipal Corporations has approved the Bill, subject to certain amendments. But to amend it is just what the Government cannot find time, even if they had the will, to do. It is not good enough to pass as it stands, and the session left is too short to give time to mould it into something better. I fancy I shall have to write next month that the Bill has gone by the board. And that will about give the finishing touch to Sir John Gorst's reputation as a parliamentary educationist. If the Bill be got rid of, I expect that the next thing will be for the Government to get rid of Sir John Gorst; he is too good for this wicked educational world of ours.

BRITISH MUSEUM

PROFESSOR WITHERS ON THE TEACHING OF HISTORY.

THE two characteristic features in Professor Withers's *Memorandum on the Teaching of History* are, firstly, **Correlation**; and, secondly, the place of history in the school curriculum.

There is nothing new in the idea of correlation. It is accepted in many schools on the Continent, especially in Germany, Austria, and Hungary. It has, of recent years, made great headway in America; and even in England infant teachers have gladly received it. "The business of the school," said Froebel, long ago, "is not to teach a multiplicity of things, but to give prominence to the ever-living unity in things." Hence infant teachers are learning to group the child's studies around one central idea, and the curriculum is simplified, the child's interest deepened, and thoroughness of work ensured in consequence.

The correlation of studies in classes for older children is no easy problem. The German teachers, especially those who follow Herbart, have grappled with it. School studies, they affirm, are by their very nature closely related. Literature, history, and geography have many connecting links. Geography is associated with science, and science with arithmetic and geometry; moreover, drawing, painting, and various forms of handwork may all be usefully connected with the school studies. The master of the teaching craft is one who can judiciously select essentials and combine them, and upon these depends the success of the school.

Professor Withers has not made large demands upon our faith in the matter of correlation. He suggests the relationships in broad outline which exist between history, literature, geography, and music, and very properly leaves the teacher to fill in the details. He does not touch upon geography as a connecting link between history and natural science, which is a favourite idea in Swiss, German, and American schools, and by no means new. Ritter, who practically founded the science of geography, after visiting Pestalozzi at Yverdon, writes, "There is between nature study and history a great gap to be filled up;" and by placing geography in the breach, he established its use as a connecting link between the various studies which crowd the time-table, especially between history and natural science. English teachers, however, find it hard to accept educational principles. They love the dull old ruts made by tradition, wherein their forefathers trod; hence the idea of endeavouring to secure cohesion and unity in school instruction does not appeal to them. Various objections have recently been urged by English teachers against correlation, among which are the following:—

1. Correlation would lead to monotony, and weary the child with useless repetitions.
2. Correlation has proved a dead failure wherever it has been tried.
3. Correlation tends to make the child shallow rather than thorough.
4. Correlation would exclude from our schools the choicest gems of literature.

The exact opposite is true of the first objection. The problem of primary education is to get more thought and more interest into the instruction, and we cannot arouse either in giving the child a variety of unrelated lessons. The writer recalls a class of girls who were studying the history of Julius Cæsar. Their interest was not lessened because they were reading Shakespeare's play and learning certain passages by heart, and, at the same time, studying the geography of Rome, drawing plans of the city in the time of Julius Cæsar and at the present time. They also modelled the Forum, and drew the Roman eagle, pillars and arches, examined one or two pictures of statues and pieces of sculpture, and dressed dolls representing Vestal Virgins, Roman ladies, and senators. A visit to a Roman road and a museum containing fragments of Roman pottery, needles, glass, and trinkets was keenly appreciated; and the children read the Acts of the Apostles and some of Macaulay's ballads for themselves with keen delight afterwards. The impression this set of lessons made upon them, as well as their interest in Rome, would probably last for ever.

That correlation has proved a failure wherever it has been tried cannot be seriously urged. A weight of evidence to the contrary could readily be gathered from other countries. Half-hearted attempts, impatiently tried, may have met with little success; but the few experiments known to the writer which have been tried in England have been richly rewarded. That shallowness is encouraged by the correlation of studies is an argument of little worth. The example quoted above serves to show how deep and abiding was the interest and how thorough the knowledge of the children in Julius Cæsar and Rome. That correlation would exclude good literature is a curious argument. Professor Withers especially urges that only what is *essential* and *fruitful* is to be selected as material for study. "Careful selection must needs be made," he says, "and those elements must be taken which are richest in suggestion and fullest in interest and meaning."

Concerning the place of history in the school, Professor Withers is emphatic in his assertion that history is to "arise quite naturally out of the other subjects," and its aim is to organise the whole of the instruction by connecting the various subjects. He points out that schools already teach Bible history, geography, and some literature, and that definite and carefully-selected history-teaching will tend to make these subjects cohere. He is also mindful of the child's environment, and would by means of history-teaching link this to the general instruction.

So rich are the relationships of history to other branches of knowledge, that it is impossible, as an American writer expresses it, "to pull history out by the roots without drawing other studies with it." Especially valuable is his recognition of Scripture as a vital power in the teaching of history. Two sets of Scripture lessons given in a German school to different classes, on Palestine in the time of Jesus Christ, and Rome in the time of Paul the Apostle, heard by the writer, merit remark. The children were breathless with interest; and the intelligence and eagerness with which they handled their atlases and drew maps in the geography lessons afterwards, were enough to convince any one that real thought, as well as real interest, had been aroused.

The series of close relations with other studies, the necessary sequence in events linked chronologically, and the ethical worth of the subject, seem to make history pre-eminently the subject to take the lead in any scheme of correlation. This, however, is not universally admitted. There are numbers of teachers, especially in America, who claim that geography, being the necessary link between history and natural science, should form the pivot upon which the other studies should turn, more particularly in primary classes.

In studying Professor Withers's connected syllabus, one cannot find traces of the subordination of history to geography except in Standards I. and II., where the geography lessons depend upon the explanations demanded by the stories. In Standard III. and onward the geography would seem to be the dominant note.

Let us consider the syllabus as far as it refers to Standards I. and II., and see how it could be worked out in the ordinary school. It would perhaps be better to group "Arabian Nights" with the classic fairy tales and European folk-lore, and confine them to the children of six in the infants' school, for the child who has not been steeped in fairy tales at a tender age misses their humanising effect for ever after.

Later, in Standards I. and II., the culture of the ancient heroic romances follows naturally. In Standard I., nothing can be more in accord with the child's taste than the story of Ulysses. This is the world's finest fairy tale, and should be presented to the child when his imagination is keen and fresh. Charles Lamb told this story for children as no other could, and in his telling the classic touch became ro-

Next Month:

SPECIAL CONTRIBUTIONS

BY

(1) DR. HERBERTSON. (2) E. EDSER, A.R.C.S.

mantic. In Standard II., more definite sagas—legendary still, as suits the child's imagination, but with a touch of reality, and more definite attachment to persons and places—should be given; for example, the Arthur legends, "Dick Whittington," "Robin Hood." There is a national pride in preserving these stories.

A series of lessons was recently given to Standard II., in Manchester, on the lines laid down in this memorandum, and they may serve to illustrate how correlation works. The teacher had carefully chosen her material, being mindful of the local legends, the season of the year, and the child's interest in romantic adventure and dramatic movement. The story of Lancelot's adventure with Tarquin the giant was an eminently fitting subject, inasmuch as the giant was said to have dwelt in Manchester, and Lancelot, riding in spring in search of adventure, encountered him, and relieved a distressed damsel.

This story was one of a series on Arthur; it was told in detail, with many pauses for recapitulation in the children's own narrative. Passages from the legend were afterwards read, with some well-chosen selections from Tennyson. A model of the part of Manchester where the school was situated, with the chief roads leading to the spot where the giant was said to have dwelt, was put before the children, and they traced the walk thither, pausing to locate some three or four public buildings on the way; afterwards they drew a plan of the walk. These lessons were followed by an account of Manchester in early times, the method being the same—a model was used first, the river and its tributaries indicated, and afterwards plans drawn by the teacher and children.

Lancelot struck a huge brazen bowl at the giant's gate, which answered the purpose of a bell. This suggested an object lesson on bells and their origin, after which the children drew bells and bowls of various shapes, and modelled them in clay. The trees which Lancelot saw bursting into leaf were chestnuts and oaks, hence the nature studies were suggested. They studied these leaves separately, compared and contrasted them, then made models of each in clay, and painted them from real specimens. There was no straining after relationships in these lessons. The incidents of the story suggested the other lessons quite naturally. The Arthur stories adapt themselves to many parts of England. The story of Arthur's sword in St. Paul's Churchyard would be thrilling to the London child. The difficulty of selecting and adapting the school material, of course, increases in the higher classes, but faith in one's educational principles will help one over the stiff places, and the reward which the scholars' interest and pleasure in the work brings is worth the pains. The freedom which the connected syllabus gives the teacher in choosing and arranging the studies affords limitless possibilities.

THE CHILDREN TO THE MOTHER.

MR. SADLER ON COLONIAL SCHOOL SYSTEMS.

IV.—NEW BRUNSWICK.

Authority.—School districts are either aggregates of sparsely-populated parishes, or cities and towns; the former have three trustees elected by the ratepayers, the latter have a Board nominated by the Governor in Council for the one part, and by the Town Council for the other. *Two of the members must be women.*

Attendance.—The school laws of New Brunswick do not compel parents to send their children to school; but when enrolled, they are expected to attend regularly.

Inspection.—For the purpose of inspectorial visitation and supervision, the province is divided into six districts. The inspectors are usually teachers of experience, and must be holders of grammar school licenses.

Teachers.—Every teacher in the public schools must obtain some professional training at a recognised training or normal school before receiving a permanent license. By far the greater number attend the Provincial Normal School, where all, except third class candidates and college graduates, attend for at least one year.

Curriculum.—In addition to the three Rs, Grammar, Geography, History, Hygiene, Nature Study, Drawing, and Singing, and in the higher grades, Algebra, Geometry, and Latin, are taught. Physical exercises are taught by the teachers. At Fredericton there is a manual training centre, attended by both teachers and boys. In some schools the girls learn needlework, but there are no cookery centres. Books are provided free of cost.

Religious Difficulty.—The schools are undenominational, no dogmatic instruction being permissible. Practical Christianity is encouraged. Teachers may open and close school with the Lord's Prayer and a portion of Scripture (Douay Version), and clergy of all denominations are encouraged to visit the school. In most of the towns, Roman Catholic children are grouped in the school under a teacher of their own faith. This has somewhat allayed the opposition of the Roman Catholics, which was at first very great.

Fee or Free?—All schools are free.

University, Secondary, and Technical Instruction are all in a flourishing condition. There are three grades of state schools, namely—(1) ordinary Common Schools, (2) Superior (Higher Grade) Schools, and (3) Grammar Schools. There is a provincial university at Fredericton; a Government training farm and a provincial dairy school are also in a prosperous condition. Nor are the deaf and dumb or the blind forgotten in the liberal school provision that is a monument to the zeal of the New Brunswickers.

V.—MANITOBA.

Authority.—The Central Administration, consisting of an Education Department and an Advisory Board with a staff of inspectors, delegates power to **Rural School Districts**, who elect the usual three trustees at the annual school meeting; and **School Boards** in cities, towns, and populous villages, where also three trustees are elected if there are no wards, and two for every ward where there is such a division.

Attendance.—There is no clause in the Act of 1890 which makes attendance compulsory, nor is there any widespread desire for compulsion. Inspector Rose quotes the case of a school which had **not been attended by a single pupil for six weeks.** The teacher attended each morning, and drew his stipend of forty dollars *per mensem*, just the same as though his school had been teeming with pupils.

Inspector.—No person is eligible for the office of inspector who does not hold a legal certificate of qualification, granted according to the regulations of the Education Department and the Advisory Board. Clergymen, members of the Advisory Board, judges, members of the Legislature and Municipal Council are *ipso facto* visitors, who may examine and advise.

Curriculum.—This includes the three Rs, plus Observation Lessons, to which are added Geography in Grade III., and History in Grade V. In addition, Elementary Science replaces Observation Lessons in Grade V., and Physiology is added in Grade VI. Religious Instruction, consisting of the reading, *without note or comment*, of certain selected passages from the Douay Version of the Scriptures, and the repetition of a set form of prayer, may also be given in school hours.

Religious Difficulty.—Up to 1890 there were separate schools for the various sects in Manitoba, and there was no religious difficulty; but an attempt to make all the schools of one kind, as conducive to a common nationality, led to six years of bitter controversy, which is only now beginning to die out.

Fee or Free?—All schools are free.

University education is provided for at the Manitoba University, and there is a system of intermediate and collegiate schools that fills the gap between primary and university education.

The Neglected Children Act, which empowers the state to take charge of a child found wandering, or who is in improper keeping, does credit alike to the hearts and to

the heads of our fellow-subjects of fertile Manitoba, who will, we hope, soon sink their sectarian differences, and reap to the full the advantages of their excellent system of schools for the people.

VI.—NORTH-WEST TERRITORIES.

Authority.—The members of the Executive Council, together with two Protestants and two Roman Catholics, nominated by the Lieutenant-Governor, constitute the Council of Public Instruction, under whom work, in the several school districts (which must not be of more than 25 square miles in area), three school trustees elected at a school meeting by resident ratepayers, whose duty it is to not only manage the schools, but to see that proper accounts and reports are presented to the Council of Public Instruction.

Attendance is compulsory, under penalties, for at least sixteen weeks in each year, of which not less than eight weeks shall be consecutive.

Inspection is on sound and therefore not mere examinational lines. The inspector "leaves the teacher with a feeling that an inspector, while a skilled critic, is a sympathetic friend who helps and inspires, yet respects individuality and independence."

Teachers.—There is a Training College at Regina, but all teachers are not trained, although all are certificated. Foreign certificates are recognised; the inspectors report, however, that teachers should have a year's training in the peculiarities of Territorial schools, for lack of which they are often unsatisfactory at first. The examination requires an advanced knowledge of systems and theories of education, and of eminent educators. High School head-teachers must be university graduates, and must hold first-class professional certificates.

Teachers' institutes, or associations for the discussion of educational matters, are encouraged.

Curriculum.—This is given *in extenso*. It is full and well graduated. The sections on stimulants and narcotics, and on manners and morals, are very suggestive. The scattered and extensive nature of the district makes it impossible to provide for secondary education beyond the provision of sixth, seventh, and eighth standards, which have a separate programme based upon the matriculation examinations of the universities of Toronto and Manitoba.

Religious Difficulty.—This is met, as in other parts of the Dominion, by unsectarian schools, and, under certain conditions, by the establishment of "separate" (sectarian) schools.

Fee or Free?—A rate not exceeding five cents per day per family, payable monthly in advance, may be charged for any children whose parents are not ratepayers to the school district. All children pay a fee in High School Departments. Many interesting items describing the extent of the district, and the polyglot nature of the colonists (to assimilate whom to the Canadian spirit is the worthy aim of the school system), are set out in the report.

VII.—BRITISH COLUMBIA.

Authority.—Much the same as in the Territories, the towns, however, being special school districts.

Attendance.—Every child from the age of seven to twelve must attend school for six months in each year, the maximum fine for failure being five dollars for the first, and ten dollars for each subsequent offence; imprisonment for thirty days being the price of non-payment of the fine. Children three miles from a school are exempt, and unavoidable causes are also taken as excusing attendance.

Inspection.—Two inspectors assist the Superintendent of Education, their *modus operandi* being the same as that of the Territorial Inspectors.

Teachers.—All must be certificated, but there is no training college, hence the teachers are "deficient in ability to instruct and to use modern methods of teaching." Inspectors are agitating for the foundation of a Normal School. There is a good provision of secondary schools, and nothing prevents a teacher from working his way up from the lower to the higher schools. "*A teacher suspended or dismissed by the trustees on a charge of gross misconduct may appeal to the Council of Public Instruction, which has power to take evidence and to confirm or reverse upon evidence the decision of the trustees. When a decision is reversed, the teacher shall not be reinstated in the same school without the consent of the trustees.*"

Religious Difficulty.—"All public schools must be conducted on strictly secular and non-sectarian principles." The highest morality is to be inculcated, but no religious dogma or creed may be taught. The Lord's Prayer may be used in opening or closing the school.

Fee or Free?—Schools are free, and are maintained chiefly by legislative grants.

Geographical and professional tit-bits are plentifully scattered throughout the interesting report, of which we can give only a bald outline.

VIII.—PRINCE EDWARD ISLAND.

The report is very short, but quite satisfactory. All teachers are trained at the Prince of Wales College and Normal School. There are "*no apprentice teachers.*" Manual training has been started in Charlottetown and Summerside. In other respects the conditions resemble those obtaining in British Columbia. Arbour Day is an institution, as in Australia, and teachers' institutes are encouraged by a grant of two days' leave to attend their deliberations. In common with other parts of the Dominion, the island has benefit from the Macdonald Manual Training Fund, under the terms of which Sir William Macdonald equips and maintains as many centres in Ottawa as are necessary for the whole province, and in addition gives valuable assistance to other provinces that are groping their way towards a less bookish education of the masses.

IX.—NEWFOUNDLAND.

Authority.—The Colonial Secretary for the Council is the central authority. There is no Education Department, and no Minister of Education. Boards of Education, appointed by the Governor in Council, are the local authorities.

Attendance.—There is no law governing school attendance. Compulsion is impossible, by reason of the scattered nature of the population.

Inspection.—Three inspectors—one each for the Church of England, Roman Catholics, and Methodists—have been appointed. The inspection of the schools of other denominations is undertaken by the Church of England and Methodist superintendents in alternate years.

Teachers must be certificated. There are three grades, in each of which there is a special salary. There is, strictly speaking, no training college in the colony; but intending teachers and pupil teachers attend the colleges of the various denominations, and go through a course of preparation for examination and for the work of teaching, a good grant of one hundred dollars for men and eighty dollars for women per annum being made to defray the expenses of the preparation. All pupil teachers are indentured to their proper superintendents, under a bond of four hundred dollars. A scheme for pensions was established by Act of Legislature in 1892.

Curriculum.—In the Methodist public schools classes are conducted in six standards, the subjects (in addition to the three Rs, geography, and grammar) being history, book-keeping, mensuration, geometry, navigation, algebra, drawing, needlework, and vocal music, with domestic economy in a few schools. Four secondary schools in St. John's, and an examining body, on the lines of the old London University, comprise the equipment for secondary education.

Religious Difficulty.—All the schools are denominational, and we are told in the report, "System is working well."

Fee or Free?—The school fee still is charged in Newfoundland, and a large proportion of the money spent on the schools comes from voluntary contributions. The system closely resembles that obtaining in England thirty years ago.

X.—JAMAICA.

Not nearly so much interest attaches to the school system of Jamaica as to some of the Dominion system, because of its close resemblance to the English system of ten years ago.

The most interesting item in the report is the discussion of the effects of education upon the coloured population, who should, according to many of the colonists, be uneducated, as schooling makes them averse to manual labour. The obvious reply is that an all-round education should deepen the respect for labour, to which end it should include manual and technical training.

XI.—BRITISH GUIANA.

When it is said that payment by results is still in operation in Guiana, teachers will not need to be told much more about the school system of the sugar colony. The only set-off is that pensions have long been recognised as the teacher's due, and have long been in existence. It is only fair to add that a commission opines that "the present system, based on the results of examinations, should be retained, with such modifications as will admit of the grant being to some extent dependent on the general proficiency of the whole school, and not (as at present) on the individual excellence of the pupils." Education is not free. There is no training college. Pupil teachers are employed, and things generally have been arranged on the English system of a dozen years ago. We do not get much light from Guiana.

XII.—CAPE COLONY.

The first ninety-four pages of the report on the distressful colony are devoted to a historical survey, which shows that education in the land of the ostrich owes much to an old-time Dutchman, De Mist, and the famous astronomer, Sir John Herschell. In an appendix, which treats of the effects of the war upon South African schools, the history is brought painfully up to date; but we cannot stay to consider either the beginning or the end of this history, since our concern is with the schools and the system as they exist under normal conditions in these latter days.

Authority.—There is a Department of Public Education at Cape Town, the titular head of which is the Colonial Secretary, but the real head is the Superintendent General of Education. The local authorities consist of Boards of Managers elected in public meeting from amongst local worthies, who guarantee to find money equal in amount to half the estimated expenditure. The managers are not less than five in number, and their period of service is generally three years, although no fixed rule as to this is in existence.

Attendance.—There appears to be no compulsion, but it is a condition of receiving the grant that a fair daily attendance must be maintained. The percentage of attendance has steadily risen from 73·7 in 1894 to 77·1 in 1899.

Inspection.—The duties of inspectors are to visit and examine all day schools, boarding schools, and departments and other institutions liable to inspection under the Education Act. "Without interfering in the management and discipline of any school, they press upon the attention of managers and teachers such changes as appear desirable in the accommodation for the scholars and the teachers, the methods of teaching, the text-books, furniture, and other apparatus, as well as the discipline and general organisation of the school." Payment by results has been advocated by a few, only to be rejected by the common sense of the Superintendent and the majority of the people. Care is taken to secure uniformity of inspection.

Teachers.—In 1899, 45 per cent. of the teachers were certificated, and in many first and second class schools every member of the staff is certificated. Pupil teachers are appointed at the age of thirteen, and serve an apprenticeship of three years. There is a pupil teachers' school at Cape Town, and training colleges at Wellington, Grahamstown, Burgersdorp, and Uitenhage. Vacation courses of training are given at various centres, but teachers may submit themselves for examination without attaching themselves to a training school. Three classes of certificate are recognised. Good service allowances and pensions are obtainable under certain conditions, one of which is a service record of at least five years.

Curriculum.—The curricula for both primary and high schools are set out in full detail. We need only observe that they are liberal and logical—for example, a modern language can be taken in place of Latin or Greek, and drawing, singing, and manual training receive special encouragement. There is an excellent university at Cape Town.

Religious Difficulty.—Schools are undenominational, without being, in any sense of the word, irreligious.

Free or Fee?—Fees are payable, but by virtue of the grant given from public revenue—which, we may remark, is given on the pound for pound principle; that is, one half the expense of conducting the school is found by the Government, the other half by the locality—the Governor acquires the right to appoint free scholars at the rate of one for every £20 in first class, one for every £10 in second class, and in third class schools, five, irrespective of the amount of aid.

There are special difficulties and peculiarities in Cape schools, such as those connected with the language question and with the presence of a coloured population. How these are dealt with will be apparent from the report. Concerning the Cape system as a whole, it is evident that it owes much to the English system, and the unpleasant reflection is borne in upon the reader of this report that the children are suffering in Cape Colony as well as elsewhere in Greater Britain from the purblindness of the mother.

OBJECT LESSONS IN HISTORY.

V.—WINCHESTER: THE CITY OF THE GREAT KING.

MILLENNIUMS are ending every day, but few events and fewer lives have been so great as to call for special commemoration when they stand a thousand years apart from us. When such claims upon our notice do occur, they form, as it were, a natural syllabus of history more appropriate for current use than any scheme they may displace, however well devised, which has been formulated for ordinary times.

The present year is, coincidently, the millenary of the death of Alfred, our *first* great king, and the closing year of the long reign of our latest great queen. These two sovereigns may be regarded, one as the Alpha, and the other, so far, the Omega, of our typical national life. In their reigns we have subject-matter enough for a year's course in history, and little harm would follow, perhaps, if all the children of all the country were this year limited to these. The reigns resolve themselves into two great pictures, and the teacher's part is to show how we are to look first on this and then on that. Queen Victoria's so aptly summarises the aims and efforts of the past thousand years as to give in great part the fruit of which the reign that ended in 901 A.D. was the seedtime. Why the harvest has been yielded so slowly, the story of the intervening ages can be made to tell at another time; and that story can be studied with greater interest, perhaps, when the beginning and ending of the period are understood.

Teachers who live in historical neighbourhoods are always to be envied; they have concrete evidence at hand to illustrate their lessons, and nothing better than this fastens on the memory what words have narrated. "Here," says the tutor, "lived the man of whom I tell: by that hillside he did such or such a deed; the little river into which you throw your hook and line sparkled before his eyes as before yours to-day: and that tree so carefully propped and guarded was a sapling when he passed it by."

In this way the people who are now living in the places associated with the greatest of the Saxons are for the present year in premier position. The Berkshire people can point with pride to Wantage, with the memorial of his birth there, or to the great White Horse on the hill near Didcot; the Somersetshire folks have the stormy days of the Athelney period, with its little domestic touch that has never failed to catch the imagination of each succeeding generation of children; whilst the inhabitants of Surrey, near London, can boast that at Merton he became king on the battlefield there, when his brother fell fatally wounded.

But it is to Winchester that belong his truly royal life and his kingly death. How tempting it must be to teach this year's history there! The late Sir Walter Besant well named this city "a wonderful treasury of things ancient and lovely." Farther back than Alfred's time its story stretches—back to 514 A.D., when Cerdic led the Saxons, who sailed up the Itchen, now beautifully gliding through the city, to clear away here a British and there a Roman camp, and to found a village which in time should grow to be the capital of Wessex, which, as Dean Kitchin says, should expand into England, which should grow into the British Islands, which should become the British Empire. And what these early invaders were like can be gathered from many local names, for they worshipped around sacred wells, under great trees, or on hilltops. That Woden and Tuesco were of their deities is as plainly told in the place names Wonston and Twyford as in the names of two of the days of the week. Gospel Oak, in Avington Park, is supposed to be the same tree that sheltered St. Augustine when he preached Christianity in these parts. But it is the cathedral which is pre-eminently the nucleus of the history of the city's civilisation, and it stands on a site that has never been without a Christian edifice since the heathen building that stood there prior to the coming of the Italian monk, the saint of Winchester, gave way before this teaching, which led to the wild inhabitants becoming less wild, and to the improvement which progressed till the city became the seat of parliaments, of synods, and of moots. When the Heptarchy became one kingdom there flourished here a school, the germ of Winchester College, and to it the young Alfred came for education under the care of Swithun the bishop, who is spoken of by a contemporary as a "treasury of virtue." Doubtless the influence of this great teacher on a mind fitted to receive it helped Alfred to become "the brightest star in the dark Saxon night." Let us add that this St. Swithun is identical with the weather-saint of our country, and this is how he became such:—Many years after the bishop and his pupils were sleeping beneath the sod of their royal city, some admirers of the prelate felt that not sufficient respect had been paid to the great man in interring his remains *without* the cathedral walls. Translation was therefore decided upon, but was delayed for forty days by continuous rain; hence the old rhyme,—

"St. Swithun's day, if thou dost rain,
For forty days it will remain;
St. Swithun's day, if thou be faire,
For forty days 'twill raine nae maire."

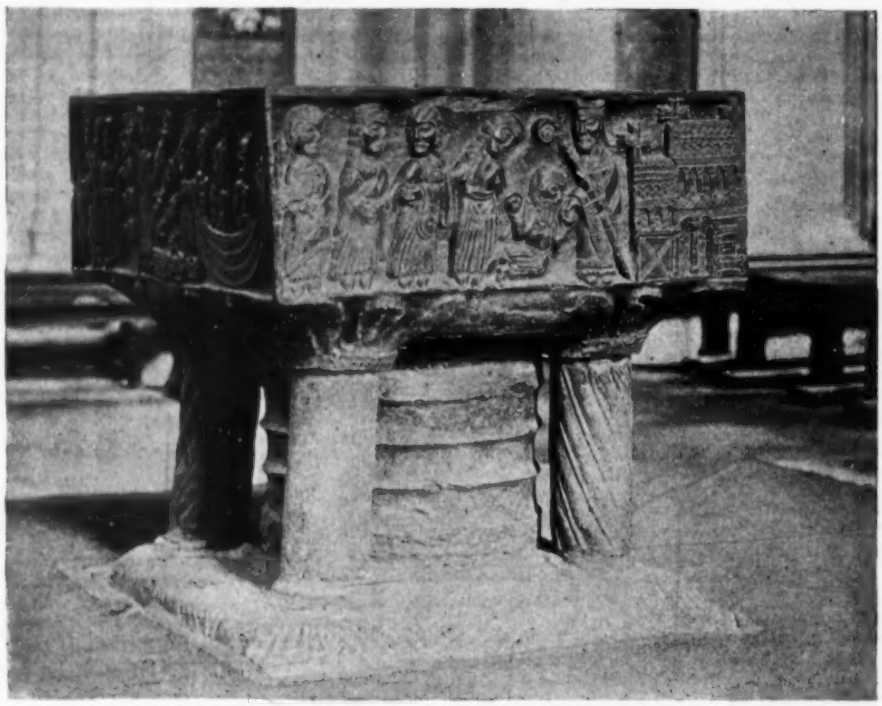
What gentle lives these two lived in this old-time capital, and their spirits seem to haunt it still; or why is "Manners makyth man" the motto of Wykeham's School, and why do the people you meet in every grade of life in this town strike you as being exceptionally courteous and refined in their speech and bearing? But cannot the past of every place be read in its present, if the vision is keen enough to detect it, although double-barrelled optics may be required to trace effect to cause, where great changes of habit have come over a people? An ancient cathedral city, however, changing only with the ages, without violent transforming influences, is among the easier to see through. But, to return to our *personæ*, let us say that in the scriptorium of the cathedral built by St. Swithun there is to-day, in fine preservation, a parchment charter bearing the signatures of the patron saint and of his boy pupil Alfred. And when the boy became a man and a king, it was to Winchester he brought his Mercian wife, Ealswitha; and from this city, later on, he set forth to face the "locusts of the Baltic," those terrific Northmen who disturbed most of his life, and would have crippled it had he been a less practical idealist. To-day the grounds of the convent established by the queen are as beneficent as when she walked amongst them; there "the sweet, fishful rivulet" meanders as of yore, but by its side the modern school child, realising the farthest dream of the educationist king, looks in at an aviary provided for its instruction and amusement. By the way, when Alfred enjoined on all his nobles the art of letters—or, if too old, on their sons, or, failing sons, on an intelligent slave—did he foresee the ultimate fall of serfdom thus, and the consequent growth of a free nation? This and kindred thoughts crowd the mind as you watch the children, and envy them their locality, because they can fix where they like, and not be far from correctness, the minutiæ of the life that is incorporated there. Was that chronometer-candle burnt on this spot or on that, and what was the man like who invented the lantern for it—an invention due to necessity in so draughty a place as a king's palace then was? If those playing children choose to take a walk, they can soon be at Hyde Abbey, or what remains of it, although no more stands intact than an archway in a farm building; but the little church opposite is all built, they say, of the stones of the abbey, and its graveyard is that of the old building. Beneath a stone here, lies all that remains of the great King Alfred. Thousands of feet will doubtless stand by this little plain monument before the present year closes. Perhaps some of our readers have already stood there; and if they have been fortunate enough to be with the National Home-Reading Union at their summer assembly held in Winchester last week, and have participated in its excellent programme, they will know from experts how rich in botany and geology, as well as in antiquities, this favoured city and its surroundings are.

WINCHESTER CATHEDRAL FROM AVENUE.

But to others of our readers the place is still perhaps an undiscovered bourn; and some of these, cyclists especially, may feel inclined, if they are wending southwards, to give a few days to their country's earliest metropolis. For these we may perhaps be allowed to indicate an itinerary which personal experience has proved to be quite practicable during a short stay.

The Cathedral,

of course, comes first, albeit disappointment awaits this first *coup d'œil*. Its tower in the centre seems too low, dwarfing the church in a way that one does not remember in other cathedrals. But you are told it will grow upon you in massive grandeur by-and-by, and so, whilst retaining the privilege of seeing everything with your own eyes and not with another's, you hopefully enter the interior; and there no waiting for the by-and-by is needed, for this unrivalled harmony in stone is as clearly a marvel to the young child as to the great artist. Whilst the English Perpendicular is here at its best in the nave, the earlier Norman is perfect in the transepts. A group of schoolboys can detect in them the characteristics of their builders. The bold Norman could build no otherwise, nor could he fail to conquer. And there lies the man, William of Wykeham, who so skilfully united these under one roof. He is there in the chantry built by himself on the spot where, as a boy attending the school formerly attended by Alfred, he loved to pray. Like Wren at St. Paul's, his building is at once his shrine and his monument. And what else of history have we here, either for a group of scholars belonging to the town, or for the pocket-book of the cyclist teacher who has called on his way elsewhere? Just under the tower lies the stone coffin of William Rufus, and for a long time he lay within it, if tradition is to be trusted (we all know the tale of the charcoal-burner bringing the dead king here in his cart). But those mortuary chests placed up there on the side screens of the choir are still more interesting. Between 1129 and 1171 the Conqueror's grandson, Bishop de Blois, "collected the bones of kings and saints who had been buried in the crypts, and placed them in leaden chests." In 1524 these were deposited in the chests you see to-day, within two of which are two of the original chests. How delightfully real history becomes to a child who is told to look up and see the box which contains the bones of King Canute, of Queen Emma, and of Edred; also that other which holds all that was once the first king of united Engle-land. The third chest is of still more special interest, for it contains the skull and most of the bones of Ethelwulf, the father of our present year's history hero. Stepping down from the choir, your feet stand where the unlovely Mary the First married Philip, the Armada king of Spain. Walk behind the altar screen and you enter the **Lady Chapel**, a beautiful building, part of which was raised by Elizabeth of York as a thanksgiving for the birth of her son Arthur, which took place in Winchester Palace. Among the ornaments are the rival roses, which the lady's marriage with Henry Tudor united. If you are a proper antiquarian, you are lost in the visible only; but if you are what such folks choose to call a Philistine, or if you are what most history-lovers are, a mixture of both, you cannot help wandering off into dreamland, and wondering what the result would have been to us all if the little fellow whose royal christening was one of the finest sights this old, old church has witnessed, had lived to grow old. What character would his Bluebeard brother have then borne in our history-books, and when would the Reformation have reached us? With a parting glance at those shields on which the parents' roses are divided by the baby's feathers, you end your day-dreams and descend the crypt, only to begin speculating anew. Is that well just under the crypt apse from which the christening water was drawn—is it, we ask, one of the sacred wells at which the wild Saxons worshipped?



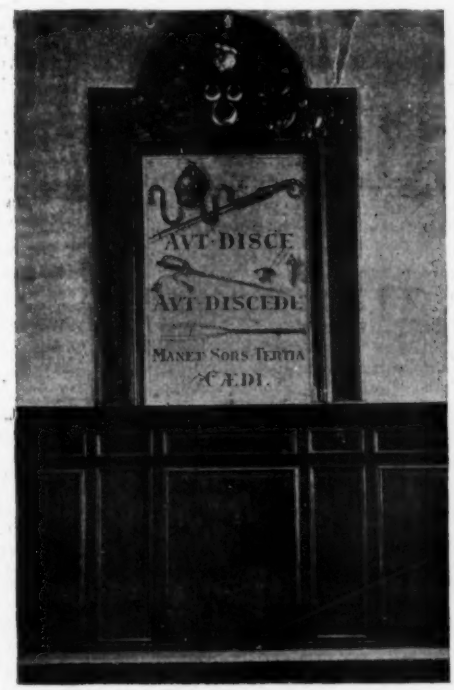
ANCIENT FONT IN WINCHESTER CATHEDRAL.

The Library is a mine of wealth such as only a very old country can possess. Besides nearly four thousand books, it contains some very rare manuscripts, one of which is the Vulgate (twelfth century), Bede's History (tenth century), and a twelfth-century Life of Edward the Confessor. In a short paper like the present it is not possible to tell a tithe of all that could be told; wherefore we will descend to the nave, and, sitting down near the old **Norman Font** in the north aisle, will examine its quaint emblems. Saxon ships and Saxon men and a Norman church are all rudely carved on its panels, and ever since the year 1129 these early expressions of reverence for St. Nicholas have been seen Sunday after Sunday, and day after day, by passing generations of the citizens. What a queer little baby was that for which the font was first used, and what a strange group was with it! The present writer, musing thus by the old font, was brought suddenly down to much more recent times by a tablet near it, to the memory of Mrs. Montagu, that friend

of Dr. Johnson's who, the reader will remember, unwittingly gave the name of "blue stockings" to learned ladies. At her assemblies Stillingfleet and other *savants* were wont to gather. The divine wore blue stockings, and he, being a great acquisition, was so missed if absent that his hostess was wont to say, "What shall we do if our 'blue stockings' does not appear?" The history of words is as interesting as all other history, and this one fact will always make the lady's tablet an object of interest. Crossing to look at it closely, the writer unexpectedly stepped over the stone that marks Jane Austen's grave, and from it learnt that she died in this city. The house in which the gentle and gifted lady spent her last days is not far away. It is easily found, as it bears a tablet, and just adjoins

Winchester College,

which should not be missed. The lineal descendant of the school that produced the man of whom Voltaire says no other has ever lived who deserved more the admiration and gratitude of posterity, and that counts among its masters the great St. Swithun, and amongst its later pupils William of Wykeham, is, for these reasons, as well as by seniority, the



TABLET IN WINCHESTER COLLEGE.

first of England's public schools. For five hundred years its aspect has remained the same—solid and grave and plain. Its chapel is seen at its best from the Warden's Garden. On the western wall of the schoolroom is the Latin inscription and warning given in our illustration. Done into English it reads thus: "Either learn, or depart, or remain and be chastised." The emblems speak for themselves of what will be the reward to the boy who takes literally either piece of advice. Everybody has heard that in the kitchen is a picture of **The Trusty Servant,** a creature symbolising faithful servitude—in having a pig's head, to denote willingness to partake of rough fare; in having the ears of an ass, for patience to bear his master's wrath; and standing on a stag's feet, to denote swiftness in errand. Other curious features complete this sixteenth-century portraiture. When the summer holidays are beginning, "Dulce Domum"—a song said to have been composed by a scholar kept at college during vacation, before A.D. 1680—is sung in the college meads. Here are the first verse and the chorus:—

"Sing a sweet melodious measure,
Waft enchanting lays around;
Home! a theme replete with pleasure!
Home! a grateful theme resound.

Chorus.

"Home, sweet home! an ample treasure!
Home! with ev'ry blessing crowned!
Home! perpetual source of pleasure!
Home! a noble strain resound."

Another ancient foundation, some distance from the town, is

The Hospital of St. Cross,

which has existed for seven hundred years, and well repays a few hours' inspection. It is a delightful bit of the old world surviving in our midst—the most ancient of our charities. Built for the care of travellers and of the sick, it was a very "castle of peace and rest." It was founded by the half-brother of Stephen to support thirteen poor men, but the number was increased by Cardinal Beaufort. In their quaint dress and their pleasant little homes these "brethren" are worth seeing. One of them escorts the visitor over the church, where the lover of Norman or of Transitional architecture finds a treat. On the exterior the triple arch should be looked for, also the thirteenth-century porch door. The dining-hall, too, contains many things of great antiquity, and after leaving it the visitor does well to keep up the old-world feeling by taking at the porter's lodge the dole of bread and ale still supplied to travellers who ask for it. Visiting St. Cross is one of the pleasantest outings tourists can make.

Before quitting our subject, perhaps mention should be made of the Round Table of King Arthur, which is to be seen in the great hall of Winchester Castle, a building completed in 1235. The people in the poet Drayton's days evidently believed in its genuineness, for he says of it,—

"And so great Arthur's seat old Winchester prefers,
Whose Round Table yet she vaunteth to be hers."

Much besides the table is to be noted in the hall, and much more elsewhere in the city; but our limits are already exceeded, and we conclude by wishing those who visit Winchester in the coming holidays as pleasant a time as many others have spent in the royal city.

MESSRS. J. AND A. CHURCHILL have the pleasure to announce that the long-looked-for new edition of *Carpenter on the Microscope and its Revelations* will be published next week. Many of the chapters have been entirely rewritten, and the whole work has been reconstructed and enlarged by the Rev. Dr. Dallinger, F.R.S., who has been spending many months in the task of bringing the book into line with the newest inventions and discoveries. This standard work was first published in 1856 as a manual of 744 foolscap 8vo pages and 396 illustrations. The eighth edition will be found to have 1,136 pages demy 8vo, and nearly 1,000 illustrations.

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FROM MONTH TO MONTH.

BY MANY HANDS.

"Quot homines, tot sententiæ."

RIDING once in mid-France, I ventured to help a fellow-traveller who was in difficulties with the language and her own itinerary. Later on the good lady suddenly applied to me for some information which I did not possess, and apparently astonished at my ignorance, pulverised me with the remark, "But you are one of those men from Cook's, aren't you?" Well, holidays are in the air, and at the risk of again being taken "for one of those men from Cook's," I am going to offer one or two suggestions for the use of the bolder spirits among the holiday-makers. The maximum of good is got from a holiday spent off the beaten track, in fine country, amid totally new surroundings. Then try Auvergne. A circular ticket, got from "Cook," saves your pocket and your temper. It goes on the plan that the farther you travel the less you pay.

Holiday Suggestions.

From Paris to Clermont is not too long a journey, and a good beginning is made. The town is well worth seeing, and from it you can do Royat and the Puy de Dôme on foot, or by a sort of *char-à-bancs*, and thus get your first whiff of the fine air that blows across this volcanic "hub" of France. On we go from Clermont to Arvant, where the route changes to the Orleans system, enters the mountains, and lands us at Neussargues, a mere station. Here stop at the station buffet, and it will not be M. Fontanier's fault if you repent it. From this place visit quaint St. Flour, and the wonderful Pont de Garabit, which has two different reputations: it introduced Eiffel the engineer to fame; and it introduces the tourist to that astonishing stream the Truyère, which has cut for itself through the volcanic plateau a gorge, more feet deep than I care to risk my reputation for veracity by mentioning.

WE pass on from Neussargues to Murat, always ascending, finally reaching the central pass and watershed between the western and eastern rivers, at Le Lioran. In a clearing among the pines are two hotels, whence you can find exquisite walking among the woods, or to the tops of those extinct craters the Plomb du Cantal, the Puy Griou, or the Puy Marie. They are experiences not easily forgotten. The pass is pierced by two tunnels, for rail and road, and you begin to descend the western slope, down the valley of the Cère, most charming of rivers. Everything combines to make this side lovely—water, trees, rocks, the gorge itself—until the valley widens at Vic. There are plenty of good and cheap hotels, preferably in the old town, at Vic-sur-Cère. The walks are bewitching, whether in the gorge or on the plateau, and continue down to the open plain at Aurillac. I recommend, however, a diversion. From Vic, by a little diligence, one can climb to Mur-de-Barrez, the straggling remnant of a once fortified town, high on the plateau further south. The drive is very fine, and during it one gets an admirable idea of the formation of this huge volcanic "navel" of France. And, also, it is from "the Mur" that you can most easily reach the finest and most striking portions of the Truyère gorge, one reach of which is spanned by a fairy-like bridge, a triumph of French engineering skill, the Pont de la Cadène. From "the Mur" the diligence will bring you by Carlat to Aurillac, whence you return by Mauriac (visiting, if you care to risk your pocket, Mont Dore and La Bourboule) to Clermont.

Auvergne.

FROM Mauriac, as a side-show, you can visit in a few hours Salers. A ramshackle little post wagon, driven by an Auvergnat who sings all the national airs and is full of chat, takes you over the pastures where the famous Salers cattle feed, through the triple fortifications, to a town which has apparently slept for four hundred years. It is quaintness personified. From its "Terrasse" a magnificent view is seen. But I don't recommend Salers as a place in which to stay; return rather by the wagon to Mauriac, and continue your journey. This Auvergne country is comparatively new, cheap, and fascinating. The contrast is sudden from the savage freedom of the plateau and craters to the fierce luxuriance of the gorges, and the trip leaves an indelible impression.

The Black Forest.

Or try the Black Forest. This sounds more hackneyed, but in truth is far from being so, especially if you avoid the big hotels filled with people who are taking an "air" or a "water" cure, and pin your faith to the village "gast-haus," half inn, half farm. There you have cleanliness, good simple fare, and kindly interest taken in you, all at a ridiculously small figure.

A good round is as follows:—Train to Baden; or if you prefer, take a river boat from Cologne to Mainz or Mannheim, and then train forward. From Baden by Gernsbach into the Murgthal, which you mount to Schönmünzach, where you will stop at the "Post." Then rise by the river to the Hornisgrinde, chief of the northern peaks, and descend on the other side to Allerheiligen, a delightful nook just above some fine falls. On to Oppenhau, whence you cross the range to the Kniebis valley, in which are some well-known baths, with big hotels at Rippoldsau, which are to be avoided.

DOWN the Wolf to Wolfach, thence by Hornberg to Triberg, famous for its wonderful mountain railway and its clocks, and by Furtwangen, down the Simonsthal, to Waldkirch, where the train may be taken to Freiburg. That works off the northern half, or at least the better portion of the northern half of the Schwarzwald, and permits a day of town life in charming Freiburg before diving afresh into the forest. From Freiburg it is best to train for a short distance into Himmelreich, whence you descend (of course) into the Höllenthal, which in spite of its name is of rare beauty. From this

Down to the Rhine.

"Valley of Hell" you mount, past Lake Titisee, to the top of the Feldberg, where you will, being human, stop in order to see the sun rise at some unearthly hour next morning, and being human, you will also be deluded. But it is good to stop there, because from it a day of unusual and striking beauty can be got. You pass from the mountain through the forest to St. Blasien, a miniature St. Peter's, that bursts on one suddenly in a clearing, like a vision. To mount from St. Blasien to Höchenschwand on the ridge is but a short matter, and then you gasp with amazement. For away to the south, right across your field of vision, lies the Bernese Oberland, on which the sun plays a thousand dazzling tricks. Drop from the ridge to the valley of the Alb, and follow it down to Albbrück, on the banks of the Rhine. The walk is magnificent, and makes fatigue a misnomer.

* * *

And Home Again.

LEAVING Albbrück, it is best to take the train along the Rhine to Brennel, where is the outlet of the Wehra, and push up the Wehrathal to Todtmoos, an odd little town which is the aim of many pilgrimages. From Todtmoos you climb the Belchen, which also has a delusive sunrise with which to tempt the traveller, and drop down the Münsterthal to the railway, which takes you back to Freiburg and home. This is but a breathless description of the chief landmarks of a trip that is full of charm—indeed, often of ravishing beauty. The pleasure is tasted to the full if big hotels are avoided; for the simple, homely ways of the Schwarzwälders, and their intense interest in you and your doings, act as a soothing balm to your spirit, while the smallness of the bills is also Gilead to the pocket. I have said "walk," but the roads in the forest, being military roads, are extremely fine, beautifully engineered, and possessed of excellent surfaces. Cycling is therefore quite possible, but the "slave of the wheel" will miss much of the intimate beauty of the Black Forest, only to be enjoyed by crossing the ridges by the mountain paths through the deep wood itself. Then for hours the walker plods through endless cathedral aisles formed by the pine stems, on a carpet of pine needles, in an atmosphere aromatic with pine scents, with constant glimpses of beautiful valley and stream far below. A cycle cuts off all that. Thanks to the admirable Schwarzwald Verein (Black Forest Club), there is no fear of losing your way, even in the most unfrequented parts. Finger-posts with full directions and distances (marked in *hours'* walking) are met with everywhere, and often evoke a fervent blessing from the timorous tramp. As for language, a very limited stock of German will carry you through, but some German you must have. Similarly for Auvergne, a modest outfit of French is indispensable. These, however, be small matters. Add a little courage, a good map, and—God give you grace of your journey.

* * *

Euphemisms once more.

A PROPOS of our note on the common practice of using euphemisms for "death," a correspondent sends an interesting list of slang French euphemisms which he has collected, all on the same subject. Many of them correspond exactly to slang English expressions; many, again, arise from the terminology of some particular occupation. One can well understand that a cabby, when speaking of his departure, should refer to it as *remiser son fiacre* (putting up his cab); or that a soldier should prefer to speak of *défiler la parade*, or *passer l'arme à gauche*, instead of mentioning the bayonet or the bullet.

Just as all trades and professions have their own special jokes and humoristic sallies, in which technical terms count for everything, so it is quite natural that they should have their own particular expressions for a thing of such universal interest. Occasionally these pass into the language, and are pretty generally accepted—for example, *épouser la camarde* (sometimes *la camuse*), where *la camarde* refers to the flat or snub nose of the death's head. In the stories of the Napoleonic legend, the reference is constant to *Elle*—that is, *La Camuse*. There is something grim in the simple term *Elle*, and grimmer still is the fact that before a battle all those to whom *Elle* had appeared in the night were called on to lead the charge. They were looked upon as predestined to die on that day, and at the summons of *Les morts, sortez des rangs*, stepped forward silently and took their places in the doomed ranks. The whole subject is gruesome but fascinating.

* * *

"Brave Carnegie, wha but he?"

THE proverb which taboos the dental examination of a "gift horse" is sound, and we would not ignore it; yet if the horse threaten to reach the proportions of a white elephant, one must look to his stabling. The educational munificence of Mr. Andrew Carnegie recently announced is more than princely, more than royal; it is—shall we use the word which would please him most?—it is Republican. More power to the elbow of the raiding Scots who go forth on the eternal "lifting" expedition, and may they all be as mindful of the "auld grey bigging" where they were born! And yet—we may now confess it freely—many of those whose deepest interest lies in education were struck with a dumb sadness when it was first announced that Mr. Carnegie's aim was practically to abolish fees in the Scottish universities. Mr. John Morley's address at Brechin brought comfort to many a doubting heart: we refer not to his political prophecies, with which (thank the Powers!) this journal has nothing to do, but to his explanation of Mr. Carnegie's plans. The official announcement, issued immediately after the signing of the deed, dispels all doubt as to the practical wisdom of the scheme.

* * * * *

The Scottish universities have many wants, but the want of students has never been much felt. They need more bursaries for poor "lads of pregnant pairts," but this is one of their least pressing needs. Class fees may amount to £10 per session, and to have these remitted will be a boon to many, but there still remains the £20 or so required for modest maintenance. What the "poor student" needs is not the mere payment of his class fees, but a bursary of some thirty pounds for three or four years, if the university is to be really "open to the talents," independent of home circumstances. *Experto crede.* According to the scheme, such additional help may be given when required.

* * * * *

The balance of one sum of fifty thousand pounds not required by the students mentioned, *plus* another fifty thousand, will go to improve the general condition of the universities on their modern side. This is good news. Probably the needs of students in the matter of fees will be met with a sum nearer five than fifty thousand. What visions then arise of the good which Mr. Carnegie's millions may bring about! Can we venture to hope that at last our "toun's college" in Edinburgh, and her elder sisters, may be so equipped with new professorships, lectureships, and post-graduate and research

fellowships, that the flower of our youth will not need to cross the Border or the narrow seas to complete their education? That is what we pray for. Endow the college, provide the teachers, and the students will come. Provide for them the mental nourishment, and they will provide the oatmeal for themselves. Our liberal benefactor knows the educative value of that pursuit.

* * * * *

Those who are behind the scenes in educational work know how futile was much of the work of our Educational Endowments Commission, which aimed at bringing about the millennium of secondary education by means of bursaries, many of them entirely unnecessary, and some of them injurious. The lesson has not been forgotten by the trustees of this great endowment.

Between the powers conferred on School Boards by the new Continuation School Code to provide bursaries for students in colleges above their sphere, and the sinews of war provided for the universities by the "brave Carnegie, wha but he?" the educational horizon north of the Tweed seems rosier than it is at present on the sunny side thereof. Why were we old boys born so soon?

N.U.T. NOTES.

BY ALLEN CROFT,

Vice-President of the National Union of Teachers.

The "B. and O." Council. Not only was the second meeting of the Central Council productive of much excellent work, but, *mirabile dictu!* under the business-like chairmanship of Mr. C. W. Hole, its labours were actually terminated by 4 p.m. If this early rising can be maintained, both Mr. Hole and the Council may fairly congratulate themselves on much valuable time saved. After all, there is really no reason why the sittings of the Council should be unduly prolonged. Where the details and minutiæ of the work have been thoroughly discussed at the meetings of the various committees, in ninety-nine out of a hundred cases the Council's business should be simply to receive the reports and endorse the recommendations. Of course, discussions must occasionally arise, but there is no necessity for their being either acrimonious or lengthy. The standing committees of the Council and their officers are as follows:—

	Chairman.	*Vice-Chairman.*
1. Finance and General Purposes	Mr. F. W. Hearn	Mr. H. Weston.
2. Relief and Loans	Mr. T. F. Bowers	Mr. J. Hodge.
3. Organisation	Mr. T. G. West	Mr. F. F. Wheeler.

The report of the chairman of the Organisation Committee on the Subscription List of 1900 contains this interesting and instructive table:—

BENEVOLENT AND ORPHAN FUND.—SUBSCRIPTION LIST, 1900.

General Analysis of Average.

	Members of N.U.T.	Average, 1899.	Average, 1900.
		s. d.	s. d.
1. Yorkshire	4,619	5 0	14 6
2. S. England	3,615	4 3	5 7
3. S. Midlands	3,728	4 4	4 11
4. Lancashire	4,994	4 8	4 10
5. S. London	3,932	3 11	4 5
6. E. London	3,540	4 7	4 4
7. W. England	3,234	4 3	4 3
8. N. Midlands	3,497	4 5	4 2
9. E. Anglia	3,184	5 2	3 9
10. N. England	2,723	4 5	3 8
11. N. London	3,402	3 8	3 6
12. Wales	3,115	2 2	2 6
	43,583	4 3	5 4

Why the Yorkshire Unionists should be able to raise nearly *six times* the amount, per member, of the hospitable Welshmen, requires some explanation!

A New Member and a New Departure. For a vacant seat on the Council, caused by the election of Miss Selvage as a member of the N.U.T. Executive, there were nominated six zealous workers for the funds—namely, Miss A. N. Stone, and Messrs. J. Harper, W. C. Haylett, R. Lloyd, J. F. Moulton, and E. J. Roberts. *Place aux dames* was evidently the motto of the Council, for Miss Stone, who has had the intense satisfaction of seeing the Nottingham Association's "purse" steadily expand year by year under her fostering care, was successful at the first ballot. The July meeting will be held at the Passmore-Edwards Orphanage at Sydenham. Seeing that nothing "enthuses"—pray pardon the Americanism—so much as witnessing the beneficent work of the funds at first hand, this strikes one as an eminently sensible arrangement.

The "V.P." Struggle. The contest for the blue riband of the Union becomes annually more keen, and already there are *four* candidates in the field. These include Mr. Coward, the "runner-up" last Easter; Mr. William Muscott, the *soi-disant* rural champion; Mr. T. H. Jones, the self-sacrificing and esteemed chairman of the Tenure Committee; and Mr. George Sharples, the popular and strenuous chairman of the Education Committee. Mr. Coward's bold bid for victory last year is, of course, greatly in his favour, but the entrance of Messrs. Jones and Sharples into the lists will make the tournament both interesting and maybe exciting. The former gentleman—an ex-president of the M.B.T.A., by the way—will naturally be largely supported both in London and Wales; whilst Mr. Sharples is certain of Lancashire, almost "to a man," and, in addition, his magnetic personality has made for him hundreds of friends all over the country. No one appreciates the honour of being chosen by the whole electorate more highly than myself. But the time must, I think, come when the vice-president of the Union will be elected by the *Executive*. Otherwise it is going to be a case of the candidate with the longest purse winning the day each year. Moreover, the mayor of a borough is chosen, not by the ratepayers, but by the town or city council; the Speaker of the House of Commons by the representatives of the constituencies; and surely the Union's chief officer for the year is largely in the position of both Mayor and Speaker. That there are objections to the course I admit; but the advantages seem to more than counter-balance them.

The Tenure Question. It will certainly not be the fault of Mr. Marshall Jackman if the pledge of the Government to introduce a Tenure Bill be not fulfilled during the present Parliamentary session. During the past month, at his suggestion, influential deputations from many constituencies have visited the House of Commons and interviewed the leading members of the Cabinet on this question, and it is understood the reception met with has been of a uniformly favourable character. Possibly, ere these lines appear, Mr. Balfour may have announced the decision of the Government in regard to the whole matter. The extraordinary paragraph that went the round of the newspapers to the effect that "the Government intend to bring in the Bill; but the chances of passing it must obviously depend on the general state of public business, and especially, perhaps, on the progress made with the Education Bill," cannot, one hopes, be regarded even as "intelligent anticipation of forthcoming events." It would be too absurd to prolong the sufferings of some hundreds of teachers simply because the House of Commons will not accept, without strenuous opposition, a Bill which, in my humble opinion, contains the germs of more potential educational crime than any other one hundred and forty lines of printed matter the world has yet seen.

In connection with the tenure question, I was delighted to see the sensible and sympathetic attitude taken up by the Church School managers and teachers at Cambridge in Whit week. I extract the following sentences from a report presented to the Congress by a committee which had carefully gone into the matter:—

"The grievance felt by an unjust or capricious dismissal has been much accentuated by the Elementary Teachers' Superannuation Act, 1898, by which the teacher is required

to personally contribute towards his pension, the prospect of which may be lost by a dismissal which he feels to be neither just nor fair.

"Your Committee are strongly of opinion that it is highly desirable that this grievance should be removed, as by so doing the position of our schools would be strengthened, and the relations of managers and teachers placed upon a better footing.

"That this may be attained, your Committee suggest the establishment of some court of appeal, to which any teacher who feels himself unjustly dismissed might refer his case. In making this suggestion, your Committee are of opinion that the existence of such a court would go a long way to prevent such cases arising."

There are many suggestions as to the *constitution* of the proposed court of appeal. In my judgment, however, the only thoroughly satisfactory solution will be an appeal to His Majesty's law courts.

Re-enter Mr. R. Wild. Last month these "Notes" included a brief appreciation of the veteran Unionist Mr. Robert Wild, and a lament at his disappearance from the Council of the Union. At a special meeting, however, of the Executive, summoned to consider the Education Bill, a letter was read from Mr. Clancy, resigning his position as ex-president on account of his business engagements. After Mr. Clancy had been cordially thanked for his valuable services on behalf of education, Mr. Wild was unanimously, and with acclamation, elected as his successor. Thus, for two years more, the Union will have the benefit of the sound judgment and ripe experience of its truly "Grand Old Man." When Mr. Wild made his reappearance at the June meeting of the Executive, he was the recipient of an ovation, as enthusiastic as it was spontaneous and exceptional.

Getting Ready for Bristol. No sooner has one annual conference been disposed of than arrangements are perforce in train for the next. Much, of course, depends on the early securing of a suitable building, capable of housing Conference, and this has already been done by the evergreen and indispensable treasurer, Mr. G. M. E. Hamilton. The city of Bristol is fortunate in the possession of the renowned Colston Hall, which, however, was deemed too large—it will hold 4,000 persons—for our purposes. Mr. Hamilton has therefore engaged the Victoria Rooms at Clifton, which appear to be admirably adapted for the many sides of Conference work. The large hall will seat from 1,700 to 1,900 on the floor, 250 on the orchestra, and 100 on the balcony. In addition, there is excellent accommodation for scrutineers, officers, Executive, and officials, whilst arrangements can easily be made for a capital refreshment-room. The sterling capabilities of the Bristol teachers can be relied on to come very near making the 1902 Conference the "record" success of a long and honourable series.

NOTES FROM THE NORTH.

Report on Scottish Education. From the Report of the Committee of the Privy Council on Scottish Education recently issued we find that the number of scholars on the registers of the schools of the country this year is 756,558, as against 741,737, or an increase of 14,821. The average attendance shows a very substantial increase: last year the number was 621,040, as against 629,038 this year. This, however, is a slight decrease as regards percentage. Last year it was 83·73; this year it is 83·14, or fully ·5 worse.

It is interesting to note that of the 756,558 scholars on the registers, there are 52,266 between thirteen and fourteen, 14,329 between fourteen and fifteen, and 6,493 above fifteen, or fully 9·6 per cent. over thirteen years of age. Unfortunately, last year's figures for this refer only to schools visited by inspectors. This year the average attendance of pupils over thirteen years of age will, we think, be augmented, in view of the encouragement given to higher-grade schools or departments, of which this year there are thirty-one.

School Supply. In the matter of school supply, the report considers that the requirements may fairly be reckoned as involving the provision of school seats for rather more than 720,084, which is one-sixth of the estimated total population. The actual supply is in excess of this by about 170,000 places, reckoned according to the minimum requirements under the Code. Taking all things into consideration, the report goes on to say that the supply may now be held to be virtually complete, except in view of increasing population.

With reference to school attendance, the report shows that where 100 school seats have been provided there are only 87 scholars on the registers, and 72 in daily attendance. We have had occasion in these notes, more than once, to refer to the lack of the enforcement of the compulsory clauses in our Education Acts, and we do not think the report puts it too strongly when it says: "We think that, without unduly straining the compulsory clauses, a considerable addition might be made to the number in average attendance. Even with necessary deductions, such as those to which we have referred" (namely, sickness, weather, distance from school), "and allowing for the absence from school of half-timers, and of those who have passed the standard exempting them altogether from school attendance, it follows, if we assume that every child may be reasonably expected to go to school for seven years, that there might be considerably over 100,000 scholars more than at present on the registers of aided schools, and a large increase in the average attendance."

The very wide-reaching changes introduced in the new Code with regard to the system upon which grants are distributed have been attended by satisfactory educational results, but it is thought best to postpone any detailed estimate of these results until at least one full year's statistics are to hand.

Teaching Power. In the matter of teaching power, it is pointed out that there are this year 10,845 certificated teachers, or a proportion of one certificated teacher for every 58 children. "But if the average attendance reached its proper level, the number of children under instruction in aided schools daily ought to be about 721,000, and for this number 12,431 certificated teachers would, at the same rate, which is certainly not too high, be required." The number of female teachers recognised under Art. 32 (*c*), 3, shows signs of decreasing. In 1895 the number stood at 179, and it is this year 124. This decrease is a matter of satisfaction, it is considered, as it proves a desire on the part of school managers to secure the services of fully-qualified teachers.

In view of the recent raising of the amount paid by male teachers into the Superannuation Fund, it is of especial interest to observe that this year the average salary (whether principal or assistant) is £142, 15s. 10d., whereas last year it was £143, 7s. 9d., while the average salary of female teachers has gone up from £69, 19s. 7d. to £70, 6s. 1d.

In 1870 the male teacher's average salary was £101, 16s. 7d., and the female teacher's £55, 14s. 2d.—thus showing that the salaries of male teachers have increased more rapidly than those of female teachers.

During the year ended March 31, 1900, the superannuation allowance amounted to £1,105, 16s. 2d., to 35 teachers (27 men and 8 women), and disablement allowances to £649, 13s. 6d., to 27 teachers (8 men and 19 women).

Parliament and Scottish Education. Captain Pirie, M.P. for Aberdeen, brought in a Bill, entitled, "The Education (Young Children School Attendance, Scotland) Bill," and it was sent to the Standing Committee of the House of Commons on Law. It has here undergone many changes—so many, in fact, that the original Bill has practically disappeared. The title of the measure proposed by this committee is, "Education and Employment of Young Children Regulation (Scotland) Bill," and it consists of two clauses.

Clause I. provides that it shall not be lawful for any person to employ any child (1) who is under the age of twelve; or (2), being of the age of twelve, but under fourteen, who has not obtained exemption from school attendance from the School Board of the district. It further enacts that no child either under twelve or between the ages of twelve and fourteen shall be employed in any casual employment, as defined by Section 6 of the Act of 1878, after 9 p.m. from April to October 1, and after 7 p.m. from October 1 to April 1.

Clause II. provides that exemption from the obligation to attend school should be granted to individual children as the

School Board should think fit; that a register of such exemptions, with a statement of the circumstances in each case, should be kept; and that the Education Department should have power in cases where the exemption was not justified, or where the school attendance of that district was unsatisfactory, to recall such exemption, with further power to withhold or reduce the grant.

This Bill, almost as it stands, has now passed the second reading.

The New Inspector. Seldom indeed has any appointment to the inspectorate given such universal satisfaction to the teachers of Scotland as the most recent one, that of Mr. James M'Donald, M.A., B.Sc., F.R.S.E., rector of Leith Academy. Mr. M'Donald's scholastic career is a unique one. A native of Portsoy, in Banffshire, he was educated at Duncan Place Public School, Leith, which he afterwards entered as a pupil teacher. In 1885 he enrolled himself as a student in the Free Church Training College, Edinburgh, in which he took a high place, being second throughout the whole of his course.

On leaving Moray House, Mr. M'Donald was appointed as a class teacher to Bonnington Road School, Leith, where he served for three years. This position he gave up to finish his university course. We have not often met with a university career so markedly successful. In all he gained nine medals and twenty-six prizes, being a prizeman in every class both in the science and art courses. Mr. M'Donald won the Neil Arnott Scholarship in Physics, was *proxime accessit* in the Ferguson Scholarship in Mathematics, being beaten by the Senior Wrangler of that year, and obtained the Maclaren Scholarship in Mathematics and Natural Philosophy (of the value of £109 per annum for three years).

On completing his highly successful course, and taking the degrees of M.A. and B.Sc., he returned to work under the Leith School Board as principal of the pupil teacher central classes, which under his charge took a new lease of life. In 1897 he was selected by the Leith School Board to fill the important position of head-master of the Academy under their management.

For the sake of our friends across the Border, we may point out that Leith Academy corresponds to a higher-grade school in England. Mr. M'Donald has therefore gone through all the usual grades of the profession, and the Scotch Education Department are to be congratulated on the fact that they have selected for the office of inspector one who has, in addition to the qualifications of a scholar, the valuable experience of the teacher. Certainly it is not the first time that the Scotch Education Department have gone to the ranks of the teaching profession for their inspectors, as in Mr. J. Struthers, Senior Examiner in Dover House, we have another who was a pupil teacher and a training-college student.

Our friends in the south will no doubt be glad to know of this fact, inasmuch as it may help to strengthen them in their demands for an inspectorate chosen from the profession, and we hope the English Education Department will soon follow the example of Scotland in this matter.

Continuation Class Code. To the many head teachers of continuation classes who have been experiencing difficulty with regard to the organisation of their schools for the ensuing session, the following reply to certain queries submitted to the Department will be of great value.

The Code leaves it very indefinite as to whether pupils attending Division I. require to be passed on at the end of the year to Division II., and so on through the various years of the course. This has been cleared up by the reply of the Department, which will very much simplify arrangements: "My Lords are prepared to allow the course of study under Divisions I. and II. to extend to more than one year."

In connection with Division I., it was felt by the teachers of girls' schools that the want of needlework in the curriculum was a decided mistake, and the question was therefore submitted to the Department as to whether they would allow needlework to be taken as alternative to drawing, one of the compulsory subjects. The Department's reply is: "My Lords are not prepared to allow drawing to be entirely excluded from the curriculum of the course for girls under Division I. They will be prepared to recognise needlework for the purposes of a grant under this article, provided that the hours of instruction in other subjects are not unduly curtailed thereby."

The Code leaves very vague the question of the length of each course in the auxiliary classes, and more particularly the time each evening to be given to a subject. Many teachers consider that an hour each evening is too long to give to such subjects as singing or drill. The Department replies as follows: "Proposals for courses of instruction under Division IV. will be considered individually. My Lords will, as a rule, require that not less than one hour shall be devoted to each meeting of the class for drill. They have not, however, thought it necessary to fix a *minimum* number of hours as a necessary condition for a grant under this division."

Munificent Gift to Scottish University Education. Mr. Andrew Carnegie, the American millionaire, a native of Dunfermline, has signed a trust deed by which he conveys for the benefit of Scottish University education the use of the interest of two millions sterling. The terms of his bequest are now known to the public, and have been met with a chorus of admiration and approval.

What is likely to be the effect of such a gift is the question that is being pertinently asked in Scotland. The scheme will practically leave secondary education in Scotland alone fee-paying, and by some it is believed that this will cause the Government to free that part of education. We do not think that any such need will be felt—not, at least, until our secondary education in Scotland is modernised.

There will, doubtless, be a considerable addition to the students of the universities, and we feel certain that the greater part of the increase will be in those who are proposing to devote themselves to the teaching profession. All the students of the first class who enter the training college should participate in the gift. They are fully qualified to pass the examination necessary, and thus all the women students in Scotland, and fully two-thirds of the men, should be attending our universities, whether they obtain at the Government examination the university mark or not. We see here possibilities for affiliating the training colleges with the university. The institution of a practical training college might also be helped out of the available funds. The Institute should take up the question immediately.

OUR GEOGRAPHICAL NOTEBOOK

(From "Our Classroom Aids" Section.)

THE ANTARCTIC IN 1901.

ENGLISH, SCOTTISH, GERMAN, AND SWEDISH EXPEDITIONS.

BY J. REYNOLDS GREEN, D.SC., F.R.S.

I.—AREAS OF ANTARCTIC EXPLORATION.

DURING the year 1901 four international expeditions will be sent to explore the immense unknown region that lies within the South Polar Circle. The unexplored region of land and sea lying within the Antarctic area comprises not less than ten million square miles.

In place of a few isolated observations, there will be made, for the first time in the history of the world, a great combined international movement similar to that formed in 1881 to investigate the North Polar regions.

The English Government Expedition will investigate what is by far the largest area to be explored—the region to the south of Australia and New Zealand. Its land base will be on Victoria Land.

The Scottish Expedition will take as its field of operations the region from the south-east of Cape Horn to the western side of Graham's Land.

The German Government Expedition has undertaken to explore the area between Australia and the Cape. Its headquarters will be at Kerguelen Land.

The Swedish Expedition will explore the mainland and islands directly to the south of Cape Horn.

From these several bases the various landing parties will each push into quite unknown regions, hoping to meet at a common centre. Their schemes sound like one of the romances of Jules

Verne; but the expeditions are being planned with great care, and should result in important scientific discoveries.

II.—THE ENGLISH EXPEDITION.

1. The Voyage to Australia: (1.) *The Ship.*—The Government Antarctic ship *Discovery*, under the command of Captain Scott, will leave London at the end of July. It has a staff of eleven officers and thirty-five men. During her voyage to Australia, Mr. G. Milne Murray, F.R.S., will direct the oceanographical and the scientific work. He is a Scotchman about forty-five years old, and has been for some years the keeper of the Department of Botany at the British Museum. He was the naturalist in the Solar Eclipse Expedition to the West Indies in 1886. Mr. Murray leaves the *Discovery* on its arrival at Melbourne.

(2.) *Magnetic Observations at the Cape.*—After coaling at Las Palmas, the *Discovery* will proceed to the Cape, and a series of magnetic observations will then be taken on shore. The object of these observations is to determine the relative value of the observations made at sea, and also to establish one of the shore bases of the expedition. Kew and Potsdam, the chief magnetic bases, are connected, but a base to the south of the magnetic equator is also necessary. These observations will, therefore, be taken at the Cape.

(3.) *Preparations at Melbourne.*—The *Discovery* expects to reach Melbourne in the middle of October, and will stay there for a fortnight. Large quantities of Amsterdam tinned meat will there be shipped for the use of the expedition. A number of sledges, a hut for the landing party, buildings for magnetic purposes and for pendulum experiments (all constructed in Australia), and the sledge dogs will be shipped at Melbourne. Magnetic observations will also be made at Melbourne.

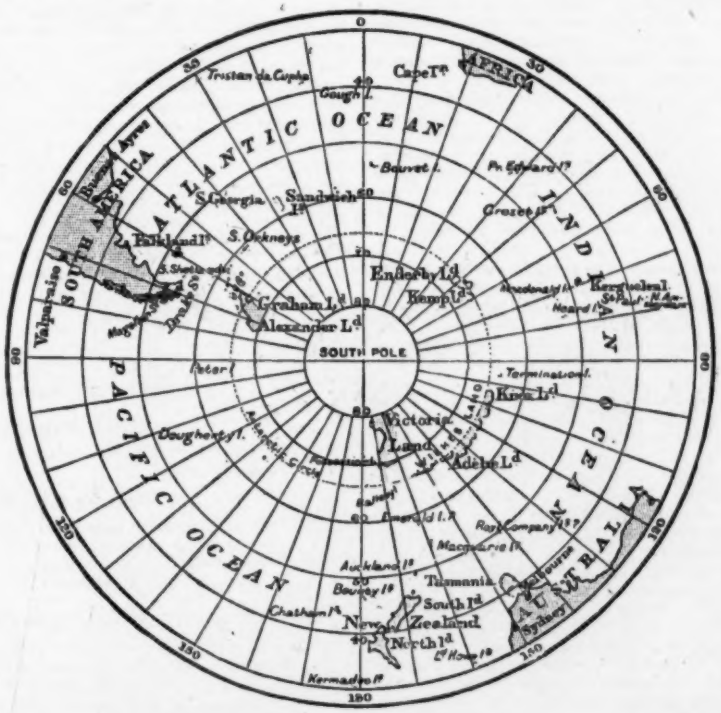
(4.) *The Dogs.*—The dogs are twenty-five in number. They have already been collected in Northern Siberia by Mr. D. W. Wilton, a member of the Jackson-Harmsworth Expedition to Franz Josef Land. They will be sent to Melbourne *vid* Archangel and London.

2. The Permanent Land Party and its Operations: (1.) *Members of the Party.*—Professor Gregory will succeed Mr. Murray in Australia as chief of the scientific staff. He is not yet forty. He travelled in the Rocky Mountains and the Great Basin of the Western States for geological purposes in 1891, was the naturalist with Sir Martin Conway's expedition across Spitzbergen in 1896, and is now an assistant in the Geological Department of the British Museum. He will have with him Mr. Shackleton, the physicist, and Dr. Wilson.

(2.) *The Ice Pack.*—It is reckoned that the *Discovery* will encounter ice within two weeks' steam from Melbourne, and the arrangements with regard to both the land party and the further movements of the ship must depend on the state of the ice pack.

(3.) *The Land Party.*—If the conditions are favourable for landing, Dr. Gregory's party will have a landing-place chosen for them between the beginning of December and the end of January. Some suitable spot will be selected between Cape Adair and M'Murdo and Wood Bays. The land party will be supplied with three years' provisions, the two huts for observations taken aboard at Melbourne, and the necessary instruments and equipments for scientific observations and for sledge journeys into the interior.

3. Exploration by the "Discovery": (1.) *Continuation of the Work of Ross.*—When it has landed Dr. Gregory's party, the *Discovery* will continue to skirt the ice barrier east of Mounts Erebus and Terror. It will map and explore any land which may be found, will take soundings all along the ice barrier, and will study animal and vegetable sea life.



(2.) *Proposed Wintering of the "Discovery" at Melbourne.*—If the *Discovery* returns to Melbourne in April or May 1902, the winter will be spent in working out the scientific results of the summer. The following spring will then be spent in again going south, picking up Professor Gregory's party, and doing what work may be possible during the remainder of the season. This will be a hindrance, and with increased funds a whaler might be hired both to land and to pick up Dr. Gregory's party.

(3.) *Wintering in the Southern Ice.*—The *Discovery* may be unable to return to Melbourne in April or May 1902. A suitable harbour will then be chosen for winter quarters. The ship will be put as close to land as possible, and employed as the headquarters of part of the expedition. In view of this contingency, a number of dogs and sledges will be retained on the *Discovery* in order to make interior sledge journeys.

(4.) *Objects of the Exploration.*—The expedition will not attempt to reach the Pole. Its primary object is geographical exploration—to discover what land there is in the Antarctic Circle, and its extent. Very great importance is attached to the magnetic work that is contemplated, for below 40° south no dependence can be placed on the magnetic curves now known. The land party will carry out continuous magnetic operations for a whole year. During the interior sledge journeys geological and other scientific work will be undertaken.

(5.) *Stores and Equipment.*—The food destined for the expedition is now being scientifically analysed. Thirty-six sledges, constructed on the M'Clintock and Nansen patterns, will be taken, some from Norway, some from Australia. The tents will be similar to those used during the Jackson-Harmsworth Expedition. With regard to clothing, furs are now being purchased in Norway, and each member of the expedition will have complete outfits of Jaeger clothing. The *Discovery's* equipment is very interesting. It includes (*a*) a balloon apparatus for exploring the ice barrier, this being the first occasion on which a balloon has been employed in similar expeditions; (*b*) windmill gear for generating electricity on board the ship; (*c*) Röntgen ray appliances; (*d*) materials for Marconi telegraphy.

III.—THE SCOTTISH EXPEDITION.

1. The Voyage.—A whaler has been so converted as to accommodate a scientific staff, laboratories, etc. The leader of the expedition is Mr. W. S. Bruce, an explorer who has already made four voyages to the Arctic and one to the Antarctic Ocean. He will have with him six or seven men of science, two of whom will remain with the ship. The others, with two mechanical assistants, will seek a landing-place directly to the south of the route taken by Weddell in 1823, when he attained the latitude of 74 degrees 15 minutes. Since Weddell sailed from Leith no one has penetrated this route. The ship's company will consist of four officers and a crew of twenty-five men.

The expedition sails in September. After coaling at the Cape Verde Islands, it will gently push south till it reaches the Falkland Islands, probably at the end of November. At Port Stanley, dogs, houses, wintering quarters and observatories, sledges, etc., will be shipped, and additional coal taken on board. The ship will now push east towards the Sandwich group, and then take a direct route south along the meridian of 30° W. This route crosses the deepest part of the Antarctic Ocean.

2. The Wintering Party.—Ice is expected to be met, in the first week in December, somewhere about latitude 60° S. The ship will push through the ice if possible, reaching land probably in about 80° S. Should it prove impossible to penetrate the ice, a course west will be steered to strike the known extension of the Graham's Land coast. There a wintering station will be set up. This base will be built and fully equipped. The ship will leave it in March, so as not to winter in the ice. Mr. Bruce will be in charge of the land party, and will have with him on shore five scientific assistants and two mechanics. His station will consist of a living-house (built like a Russian log-house), meteorological and magnetical observatories, storehouses, and accommodation for the dogs. Extensive observations will be taken during the whole period of absence from the ship, and during the spring it is proposed to make sledge journeys along the coast and into the interior. During the summer the land party will be visited by the ship, and will retain the vessel, if funds allow of it, for the purpose of local oceanographical research. The ship will then return north while the wintering party proceeds with its work. Besides the necessary provisions for each year's work, stores for two extra years will be landed with the wintering party, to provide for the emergency of the ship not being able to relieve the scientific expedition.

3. Object of the Exploration.—The Scottish Expedition will concentrate itself mainly on general oceanographical research. The cost of the expedition for three years' work is estimated at about £35,000. One-third of this amount has been subscribed at present.

IV.—THE SWEDISH AND GERMAN EXPEDITIONS.

1. The Swedish Expedition.—Want of funds is hampering the arrangements of the Swedish Expedition. But it is settled that Otto Nordenskiold, the leader of the expedition, will leave Sweden in September for the Antarctic. He does not propose to winter in the ice, but will explore the vicinity of the South Shetland Islands and Erebus Gulf.

2. The German Imperial Antarctic Expedition.—This is a very important Government expedition.

(1.) *Is there an Antarctic Continent?*—"Up to the present," says Professor von Drygalski, "no one even knows whether there is a continent or merely detached pieces of land in the South Polar seas, and all that has been advanced on this subject is pure hypothesis. Nansen's view that the land is in the form of islands conflicts with the opinions advanced by others that there is a connected mass of land or ice, but the meteorological observations tend to show that the latter view is the more probable. To judge from the specimens found in the sea bed, geological reasons also point to this. But direct exploration can alone settle the point, and it is with a view to finally determining this that the Imperial German Government is making such extreme preparations."

(2.) *The Ship.*—Professor Eric von Drygalski, the leader of the expedition, has had a specially constructed ship, named after Ganss, the great scientist, built at Kiel. She has great ice-resisting powers, and is built on different lines from Nansen's *Fram*, which was not a good sea boat, and would not be suitable for the long southern voyage. She will sail in August, under the command of Captain Ruser, with Herr Steho (both of the Hamburg-American line) as engineer.

(3.) *The Station at Kerguelen Island.*—Dr. Karl Luyken the physicist, and Herr Werth the geologist, will make, during one year, important magnetic and meteorological observations on Kerguelen Island.

(4.) *The Main Expedition.*—It is expected that land will be found on which the main body of the expedition will winter for the months corresponding with the European summer of 1902. After establishing the scientific station at Kerguelen Island, sledge parties will be sent farther south towards the terrestrial pole, and also towards the magnetic pole in Victoria Land. At the end of the winter the expedition will continue its voyage west, and will, if possible, proceed south of Kemp Land and Enderby Land to the Weddell Sea, whence it will return home by way of South Georgia and Tristan da Cunha. It is supposed that the expedition may take only two years, but it is equipped for three.

(5.) *Combined Operations.*—The German Imperial Expedition is an independent expedition, but has arranged to combine its operations with those of the other expeditions. Arrangements have been made with the English Expedition with regard to equipment and instruments, and especially with regard to terrestrial magnetic operations. The United States will further the objects of the expeditions by initiating terrestrial magnetic work. Ganss, the scientist after whom the German exploring vessel is named, first suggested the exploration of the Antarctic. The next three years should show a great advance in our knowledge of the Southern Seas, even if they do not settle the vexed question of an Antarctic continent.

NOTE.

ANTARCTIC EXPEDITIONS, 1599–1901.

I. Dutch Expedition.

1599. The *Good News* of Rotterdam discovered the *South Shetland Isles.*

II. Spanish Expedition.

1605–6. An expedition in search of *Terra Australia Incognita*, a supposed continent round the South Pole, left Callao in 1605, and discovered one of the New Hebrides group, which was named *Australia del Espiritu.*

III. French Expeditions.

1671. La Roche discovered *South Georgia.*
1772. Kerguelen discovered *Kerguelen Island.*
1837. Expedition of D'Urville, discoverer of the Venus of Milo. He discovered *Joinville Island* and *Louis Philippe's Land*, circumnavigated Borneo, and discovered *Adèle Land.*

IV. Russian Expedition.

1820. Bellingshausen discovered two islands, *Petra* and *Alexander.*

V. American Expedition.

1853. Captain Heard of the *Oriental* discovered two islands, *Heard* and *M'Donald.*

VI. English Expeditions.

1775. Captain Cook discovered *Sandwich Islands*; Willis, *Pickersgill* and *Georgia Isles.*
1806. Bristow discovered *Auckland Island.*
1810. Hazleburgh discovered *Campbell Island.*
1821. Bransfield discovered the *South Orkneys.*
1831. Captain Biscoe discovered *Enderby Land* and *Adelaide Island*; Freeman discovered *Sabrina Land*; and Balleny, *Balleny Island.*
1839–43. Sir John Ross's expedition to discover the South Magnetic Pole, with Dr. Hooker as naturalist. The expedition discovered *Possession Island*, *Frankland Island*, and *Victoria Land.* It surveyed the South Shetland Islands, and fixed the South Magnetic Pole.
1900. Borchgrevink's expedition (the Newnes Expedition).

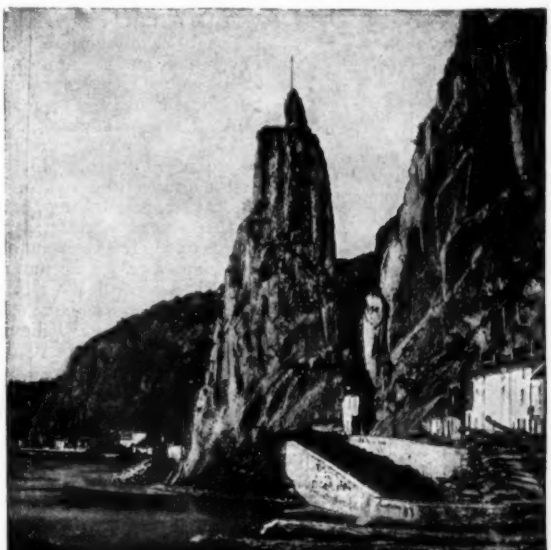
Our Holiday Section

SUMMER LIFE ABROAD:

HOLIDAY PAPERS BY PRACTICAL TEACHERS.

HOLIDAY TRAVEL NOTES.

ONCE more, in order to anticipate the needs of many of our readers, we have found it necessary to brace ourselves to the preparation of a holiday section of this journal. By the time this issue appears the summer vacation will again be within hail, the holiday spirit will have taken possession of all, and in the course of a brief week or so thousands will be in holiday humour and on holiday bent—many flying to the coast for a sojourn by the sea, and others taking full advantage of the easy, quick, and cheap travelling by traversing the broad continent of Europe. If hardest workers live the longest, it is because they change the channels of activity in the direction of well-timed and well-spent holidays. Practical teachers cannot therefore safely deny themselves the necessary recreation of an annual holiday. "It is better to spend money in travel than on doctors' bills," wrote Mr. Yoxall in his delightfully interesting "Tour in Touraine," which appeared in a recent issue of *The Schoolmaster*.



LA ROCHE À BAYARD.

(*From Messrs. Ward, Lock, and Co.'s Guide to Belgium and the Ardennes.*)

In the many illustrated holiday contributions and travel papers which have appeared in our columns during the past five years, we have tried to answer the question of "Where shall we spend our holidays?" by giving the experience of teachers who have travelled not only over the home country, but in all parts of the Continent, including Scandinavia, Spain, and Greece; and as we have good reason for believing that our aid has been much to the purpose of our readers, we have again arranged for a few papers written by teachers, which we trust will meet with that welcome hitherto given to all information relating to foreign travel.

Travelling has ever been a favourite pursuit for those who have leisure and means to indulge in it. Still, as we have remarked on a former occasion, foreign travel is no longer the privilege of the rich, and to-day—thanks to competition—one may reach many charming spots in continental Europe at a very moderate outlay.

It is true our flying visits to foreign lands will not, as in the days of Dr. Johnson, cause us to be caressed and quoted as travellers; but we must not, on the other hand, overlook the fact that the time and expense then necessary for a limited tour would enable us, with present-day advantages, to satisfactorily tour the whole of Europe.

As the chief railway companies now issue *gratis* illustrated handbooks relating to the holiday resorts of our own country, we have felt it unnecessary to occupy the space of THE PRACTICAL TEACHER with details which our readers can so easily obtain for themselves.

Cook's Travel Tours.

By far the most important programme of holiday tours is that just published by Messrs. Thomas Cook and Sons, the tourist agents of world-wide reputation. In looking through the pages of this book, one cannot but be impressed by the vast organising power of the firm, which is able to arrange so immense a variety of popular tours to commence practically on each day throughout the summer months. Only those who have availed themselves of Messrs. Cook's services know their full value when they are "on the other side." A much-travelled writer, in our "By Many Hands" column this month, truly remarks: "A circular ticket got from Cook's saves your pocket and your temper. It goes on the plan that the farther you travel the less you pay." Messrs. Cook are, of course, well aware that, for various reasons, many people are prepared to travel abroad under less luxurious conditions than those of their select conducted tours, wherein economy, although equally studied, is viewed from a different standpoint. For many people, wagon-lits, daily carriage drives, and fashionable and palatial hotels have no attraction, whether from a monetary point of view or from that of comfort. Second-class railway travelling, good, comfortable hotels with substantial meat breakfast, good *table d'hôte* dinner in the evening, after a long day's outing, with luncheon of some sort taken wherever happens to be most convenient, are to many all that is essential; the only question that they are in doubt about is what will be the cost. The popular holiday tours enumerated in the programme referred to have been specially arranged in answer to that question. The unique facilities for organising economical travel which Messrs. Cook possess by their position as official

agents for the principal railway and steamer lines in Europe, coupled with their special contracts with over 2,000 hotels and pensions at home and abroad, enable them to offer an array of tours, **combining travel-ticket and hotel accommodation in one charge,** such as has never before been placed before the travelling public. These special arrangements range from a simple Saturday to Monday excursion to tours of three weeks' duration, and embrace the most popular districts in England, Scotland, and Ireland, as well as Holland, Belgium, France, Germany, Switzerland, Italy, and Norway.

There are special facilities for schools and colleges, societies, institutes, and clubs, and Messrs. Cook and Sons will be glad to give assistance to head-masters and secretaries who may wish to organise parties to or through any part of Europe.

In inviting our readers to apply for the detailed programmes issued, that they may study the list of innumerable tours for themselves, we would just mention the "**Week in Switzerland,**" which is advertised at either Lucerne or Geneva for £5, 5s. This amount includes a second-class ticket out and home, comfortable accommodation, consisting of breakfast, dinner, and bed, not forgetting the services of a competent interpreter. There is also a "**Week in Holland and Belgium**" for £5, 5s., visiting the Hague, Amsterdam, Rotterdam, Antwerp, Brussels, and Waterloo. Another special tour announced is "**Eight Days in Ireland,**" visiting either the North of Ireland or Connemara and the Wild West; also to the beautiful Lakes of Killarney. The first two are each at £5, 5s., whilst the third is arranged for £5, 15s. Rail, steamer, coach, and hotel charges are included. It is hardly necessary to say how exceedingly moderate are these charges, and that our readers may expect the best value in return from a firm which has enjoyed so high a reputation for upwards of half a century.

Lake District of Norway.

A series of charming holiday tours by the Wilson Line from Hull or London has been arranged, and is specially announced in a prettily-illustrated handbook issued by the London agents for the line, Messrs. Bott and Co. of East India Avenue. The Scandinavian Peninsula is a delightful and invigorating part of the Continent, and those who think of a tour through the grand mountain scenery or a sail along the coast cannot do better than provide themselves with Messrs. Bott's descriptive handbook, which contains everything that is worth knowing about the land of lakes, fiords, and of midnight sun. The fullest particulars are given as to cost of tours, dates of departure, etc., in connection with the comfortable steamers of the Wilson Line, which were specially built for the Norwegian passenger service, with saloons and sleeping accommodation amidships. The tours, which were commenced in 1895, have, we understand, proved most popular; and the excellence of the travelling arrangements and the accommodation provided has been spoken of in terms of the highest praise. The bracing air and wonderful scenery should greatly attract the Briton. The Scandinavians are an interesting people, a race closely akin to ourselves, and the first foreign language taught in their schools is English.

Guide Books.

Messrs. Ward, Lock, and Co. have sent us another parcel of their **Shilling Pictorial Guide Books.** This series has been noticed by us year by year in the most favourable terms, and of the newest volumes before us we do not hesitate to say that they are honestly worth treble the price charged for them. A special feature regarding these guide books is that they are always up to date, and we understand that the publishers are able to guarantee this by reason of the fact that nearly all the books of the series are kept in standing type at enormous expense, and that they are served by a large staff of correspondents in all parts of the country. The guides are profusely illustrated by a great many well-printed half-tone reproductions. They are also replete with a large number of reliable and clearly-drawn maps and plans, based upon the Ordnance Survey, but supplemented from other sources of knowledge. The new volumes referred to are—**Belgium, the Ardennes, and Holland; Oban, Fort William, and the Western Highlands; The English Lakes; The Donegal Highlands; Isle of Wight, Lowestoft, and London.** These are but recent additions to what is now a very large and complete series, particulars of which will be seen in our advertisement columns. All are full of practical information, and contain everything that is necessary to the traveller and holiday-maker. The matter bears evidence of most careful editing, and of considerable originality in arrangement. We hope these delightful pocket guides will have the wide sale they deserve among practical teacher readers.

Conversational Manuals.

Mr. Nutt has opportunely issued a shilling edition of Howard Swan's pocket manual of **Colloquial French with Phonetic Pronunciation.** Other editions of **Colloquial German** and **Italian** (1s. 6d. each) have also been prepared on a similar plan to the French handbook. These books are intended for the use of English-speaking travellers and students, and contain in parallel columns a good selection of appropriate sentences in common use. A third column contains the exact phonetic pronunciation of each word represented, on a new system based upon a scientific analysis of French (German and Italian) sounds. Special vocabularies suited to the needs of the cyclist and the photographer have also been added. To those who know little of the languages mentioned these pocket manuals should prove most helpful; whilst the average advanced student will find, in looking over the large selection of idiomatic phrases, that there is much that is of the greatest possible value to *all* who wish to coach themselves in the colloquial side of the languages. We have nothing but praise for these really excellent manuals.

Messrs. Marlborough and Co. send us copies of their **Self-Taught Library**—No. 1, **French**; No. 7, **Swedish.** These little books contain vocabularies, elementary grammar, conversation, travel talk, with an accompanying set of desirable phrases for photographer and cyclist. The matter is arranged in columns, and the approximate pronunciation is attempted at the side of each word and sentence. The **Swedish Handbook** just issued has been specially edited by W. F. Harvey, M.A., Universitetlektor at the Royal University of Lund (Sweden). The books are adapted to self-tuition, and should be examined by those interested in these languages. Two extremely useful books in the same series are the **French** and **Swedish Washing Lists,** bound together in book form. Of this series the editor says: "Travellers and others having hitherto long felt the want of a practical and complete book of Washing Lists, with counterfoils, alphabetically arranged in English, I have decided to publish this work (French) in a handy form, and to issue others in the same series for every European language, believing that they will prove most useful to all tourists, travellers, sportsmen, cyclists, and others travelling on the Continent. When this is the case, the **Marlborough Series of Foreign Washing Books** will have satisfactorily fulfilled their mission."

THE FOREST OF ARDEN.

"Now am I in a holiday humour."—*As You Like It.*

IT all began at a tea-party, among the chimney pots on the roof of Newnham College, during the Extension Meeting at Cambridge. People who have conscientious views about attending lectures find the demands of Summer Extension Meetings severe. Some of these consider seven lectures a day a moderate allowance; and when chaos, born of many lectures, prevails in their souls, they call it culture. We held unorthodox views on the subject of lectures, and we absented ourselves, went late, and came away early whenever it suited us—all except Antigone. She was a serious person, with a well-balanced mind and a strong sense of duty. She taught in a High School, and she thought it proper to maintain a lukewarm attitude towards the whole universe. Apparently she never had an emotion or a prejudice in her life, so we called her the "golden mean." She went to many lectures, not because she liked them, but

from a sense of duty. The tea-party among the chimney pots went gaily; the flames from the spirit-lamps flickered feebly in the sunlight, and the bread-and-butter curled up

THE FÊTE-DIEU PROCESSION AT DINANT.
(*From Messrs. Ward, Lock, and Co.'s Guide to Belgium and the Ardennes.*)

gracefully under the noontide glare. We lounged against the red cushions, under the chimney stacks, and gazed upon the extensive view and the blue heavens; we drank many cups of tea and we glorified idleness—all except Antigone, who talked about duty. Then we fell to discussing holiday plans. One was going to Ireland, to collect folk-lore; another to France and Italy, to photograph cathedrals; a third was bound for a German holiday course, to study phonetics; and Antigone was going to Ober-Ammergau, to see the Passion Play. Everybody had definite plans on the matter, except Pompilia and myself, and we began to deliberate. Pompilia is a casual creature with a sense of humour, and I am said to be an optimistic person with an ill-regulated mind. The others all gave us advice, especially Antigone, for we were supposed to be incapable of making plans of our own. But we were hard to please. Pompilia wanted to go to Arcadia, and I would be satisfied with nothing short of Fairyland; and though we were all teachers and students of educational theories, none of us could fix the geography of these desirable localities.

"They say he is already in the Forest of Arden, and a many merry men with him; and there they live like the old Robin Hood of England.....and fleet the time carelessly, as they did in the Golden World," I quoted presently, as a flash of memory brought up images of pastoral plays.

"Ah," said Pompilia, "and where is Arden?"

Opinions differed, as is customary in scholastic circles: but Pompilia and I declared it to be in the Ardennes, and we promptly decided to go in quest of it. Antigone disapproved of our prompt decision. She said that holidays should be deliberately planned, and have a definite aim. We said we were going to do research work; we proposed to discover the Forest of Arden by finding "Rosalind" carved on the barks of the trees, and then write a pamphlet about it. Antigone was still severe; she called us frivolous. But presently the tea-party ended, and we all went off to a lecture on the psychology of history teaching.

The next day we packed up our bags and departed. We took plenty of foolscap paper and well-filled fountain pens to write the pamphlet; and a little Plato, and Whitman, and Kipling, to help "to fleet the time" withal; and some Schopenhauer and Rousseau, to rouse us and to make us combative when it rained and we felt dull.

In a few hours we were in Antwerp. This city was as hot as London, and some degrees dirtier; but the rippling melody of the chimes gave us joy. We also found satisfaction in mourning over the days when "art was still religion," and we gloried in the Plantin relics and the work of Quentin Matsys; and we went round the galleries, comparing the Madonnas of Raphael and Rubens. I looked into shop windows, and coveted quaint silver clasps, and lace, and old oak chairs; but Pompilia had no material desires—she simply existed and was happy. Charles took all our responsibilities upon himself. He was a squat waiter of benevolent aspect. He wore a corn-bottle blue apron while he polished his spoons with paraffin. He gave us advice about trains and trams, and was very indulgent towards our whims. Then we went to Namur, where a sour waiter disapproved of us, and we missed the benevolent Charles; but, as Pompilia said, we were at the gate of the Ardennes, and so we didn't mind.

> "A nice little boy held a golden ewer,
> Embossed, and filled with water as pure
> As any that flowed between Reims and Namur,"

she quoted, as we looked down from the citadel upon the flowing Meuse.

From Namur we went to Dinant by steamer; and we read Whitman as we glided up the river, and laughed over the beauty and joyousness of life. We loved Dinant with its grand rocks, pumpkin-shaped church tower, silvery chimes, quaint streets, processions, gorgeous gingerbread shops, beautiful sunsets, and long river reaches. We explored the valley of the Lesse, and had many adventures—with an innkeeper, who let us go into the kitchen and grind and make coffee, and drink it under the plane trees, while his wife was in the hayfield; with a handsome blacksmith, who carried our bags, and showed us the way when we were lost; and with rosy, sturdy mites, who helped us to eat the pears we bought from blue-gowned old women, who had beehives in their front garden.

So the time fleeted carelessly. We walked, worked, sketched, lay in the sunshine and abused Schopenhauer, and gathered unripe blackberries. But we were not entirely happy; we sighed for sheepcotes, and rusticity, and shepherdesses. We asked the elderly Belgians who frequented the summer resorts for the whereabouts of Jaques and the Duke; but nobody knew. One day we packed up our bags in despair, and went to the railway station and asked for tickets to Han; we meant to explore from another centre until we found the true Forest of Arden. Somehow we got out at Eprave, we didn't know why; but a man came and took our bags, and we followed him: we found out afterwards that there was no railway station at Han. Outside the station we stood in breathless joy. We recognised in an instant that this was the Fairyland of our quest. A long wagonette waited, and a black-eyed youth smiled at us, helped us in, and drove us gaily along the white road. "Where are we going?" whispered Pompilia. "Hush! it is Fairyland," I said; "wait and see." So we waited. Soon we came to a village, and such a village! The houses were the sheepcotes of our dreams. They were dear little thatched huts with latticed windows, and traveller's joy running riot all over them. The street was

THE FÊTE-DIEU PROCESSION AT DINANT.
(*From Messrs. Ward, Lock, and Co.'s Guide to Belgium and the Ardennes.*)

like a farmyard in Grimm's fairy tales. The people kept all their ploughs, harrows, carts, and spades there, when they had any to keep; straw heaps, dunghills, and stacks of

wood lay promiscuously about; hens, ducks, pigs, and goats sported around; and soft-eyed cows stood about the open doors lowing melodiously. Men and women with sickles cut down the golden corn on the slopes across the slowly-meandering stream, and from within rude barns came the rhythmic sound of flails threshing the grain. "We shall meet Rosalind and Touchstone presently," I whispered in excitement. "See! Audrey is fetching up her goats on yonder hill, and William is cutting down the corn on the slope." Just then a blast from a horn sounded. "It is for the Duke's evening meal," I cried joyfully; "we shall be in time for the feast. We shall see Jaques and hear him talk." Suddenly the wagonette stopped before a gray farmhouse with a cobbled yard in front of it, and great pears hanging all around the windows. I prepared to alight, murmuring half aloud to a man with a pitchfork, who came to take our bags,—

"I prithee, shepherd, if that love or gold
Can in this desert place buy entertainment,
Bring us where we may rest ourselves and feed."

"Hush!" said Pompilia; and I stood by, meditating on a conversation with Jaques, while she talked to a damsel who came to greet us. Then I found myself following Pompilia and the damsel indoors, and the man with the pitchfork brought our bags. "What are we going to do?" I whispered to Pompilia. "We are going to stay here and write the pamphlet," she replied promptly. "And Jaques, and the Duke, and the Golden Age!" I murmured in disappointment. "They are all here," she said soothingly. The dark-eyed damsel handed us over to "a daughter of the gods," tall and very handsome. She was big and brown, with blond hair, russet-tinted, big dimples in her cheeks, and a large mouth full of strong white teeth. She led us along polished wooden passages, and the man with the pitchfork followed. She showed us two bedrooms, handed in our bags, and left us. Yes, we were in Arden at last; we knew it. Everything was simple, and so deliciously clean. The house smelt of sunshine, lavender, beeswax, pines, honeysuckles, the breath of cows, and all the fragrances that come fresh from the earth. The beds were spotless, the floors shone like mirrors, and there was a table in my room where we could sit and write the pamphlet. My window was wide open, and a great garden lay before me, beyond which were slopes yellow with corn, melting into dark forests, and a crimson sunset flamed over all. Grapes and pears hung around the window, and the breath of wild thyme and roses came up from the garden. And such a garden! How we loved it! It was centuries old, and it covered three acres. The sweet-pea rambled at will, rioting with the roses; and sunflowers, dahlias, lobelias, and marigolds blazed everywhere. Then there were beans and marrows, mint and marjoram, carrots and curly lettuces; and the pinks ran into the onion beds, and the sweet-marjoram crept in among the bachelor's buttons, while the lavender flirted with the spinach.

Pompilia came in presently with a blue pot of warm water. She told me to get ready for supper, and then she went to the window and looked her fill upon the garden, murmuring in a hushed whisper,—

"A garden is a lovesome thing, God wot!
Rose plot,
Fringed pool,
Ferned grot—
The veriest school
Of peace; and yet the fool
Contends that God is not—
Not God! in gardens! when the eve is cool?"

The supper bell called us away from garden worship; but when the meal was over we walked under the moon, among the fragrant things that bloomed about us, and were filled with a great content.

"I like this place,
And willingly could waste my time in it,"

I said as we parted at our bedroom doors; and Pompilia agreed with me.

We wasted three weeks in this blessed place, and we wanted to waste the rest of our lives there. All the household took us to their hearts, from the host himself to the little maid in wooden shoes who washed dishes under the apple trees in the back yard. The host was portly, he had a rosy countenance, and he went about in his shirt sleeves; sometimes he wore a blue apron, and always he wore a heavy watch-chain. He used to give us sugar for the horses, show us how to blow blasts on the horn, walk about the village with us, and admire our best blouses. His sons drove the wagonette and dug the garden, and his daughters attended to the house. The dark-eyed damsel was Elspeth. She received the guests, made their bills, gave them advice and information, and flirted with such men as happened to please her. She waited at table, and chatted affably to everybody at the same time. She was kind to us; she borrowed our hairpins, and showed us her Sunday clothes. Elspeth wore a silk blouse and a watch-chain in the evenings. She had once been to school in Brussels, and she piled her hair on the top of her head in the prevailing fashion.

The "daughter of the gods" was Martha. She was the chambermaid; she polished the floors every day, and brought us blue pots of warm water to wash in. She wore a blue linen skirt and jacket like the peasant women, and she looked like a queen in them. She had a kind heart, and she often brought us hot milk into the garden, and told us that much reading was bad for the eyesight.

It was some days before we discovered that the pleasant-faced woman with the hardy complexion and twinkle in her eye, who sat in the kitchen in a loose, old-fashioned blue bedgown, was the mistress of the house. She used to sit by the vine-clad window, shredding lettuces for salad, and directing the sewing-woman how to cut up the roll of coarse blue linen into aprons and skirts; at the same time she kept her eye on the red-armed maid in sabots who washed dishes under the apple trees, and occasionally she chatted with the *chef* through the door which led to his sanctum. She had an active mind, a quick wit, a ready tongue, and a pleasant smile. She had silk gowns, gold earrings, and a watch-chain upstairs in her press, Elspeth told me, but she was too busy and too careful to wear them. Sometimes she sat for a few minutes with the stout Belgian ladies as they drank beer and coffee in the big porch and talked about their husbands and their ailments. The Belgian ladies wore tight satin gowns, and bugles, and much yellow lace; but our dear madame always wore the simple garb of the peasant woman.

The *chef* was the most imposing personage in the place. He was a big, well-nourished man, with a stately manner born of superior knowledge. He wore spotlessly white linen clothes and a white linen cap. He was a solemn and severe person when he trussed chickens, mixed salads, and handled pots and pans; but he sometimes relaxed in his unofficial moments, and then he had a beautiful smile. We used to make tea in the garden every afternoon, and we had to go to him for hot water. He smiled at us as he ladled it out of a shining pan with a big enamelled ladle. Sometimes he let us stand and watch his skill in the manufacture of mushroom omelets, and he permitted us to express our admiration for his genius and his shining pots; and occasionally a souffle appeared at the dinner table, which Elspeth told us he had made especially for us. It was a warm-hearted, friendly household—everybody was always so glad to see us, and so sorry when we went away. Then there were the Belgian ladies, who had come to get rid of digestive troubles, shortness of breath, and other ailments. They used to eat a great deal, and drink more. They had no necks to speak of, and very little hair, but they wore big black plaits in the afternoons and evenings. We used to meet them sometimes in the mornings, wrapped in dingy brown shawls, without their plaits, and they were not pleasant to look upon. One had a husband, the other a son. The former was a puffy, kindly, bored-looking man. He used to bring pellets, and globules, and powders to his wife all day, and then boast to me of the difficulty he had in keeping her alive. I sometimes wondered why it was necessary. The son was a person with green eyes and no chin. We took an unreasoning dislike to him immediately, which persisted. The puffy man and his nephew drank beer, played cards, and

fished, in the intervals of eating, and the ladies took medicine and talked about cooking. There were many fleeting guests, on their way to the caves—sallow priests under vows of silence, and heavy Dutchmen with their families. Once there came a handsome and very polite Boer, who was reading medicine at Leyden. He asked us what the English people thought of Chamberlain, and we replied, discreetly, that it depended on their political opinions. We used to give him tea in the garden, and he told us about flowers and insects. We soon wandered about the house and village like the privileged mortals we were. What a dear, delicious, sweet-smelling village it was! all sunshine, cows, cleanliness, and simple joys. Every morning we rambled through the village, and we never wore hats or gloves. We watched the blacksmith making sparks fly from his anvil, and the men making straw ropes to bind the sheaves of corn. We talked to all the babies, and made friends with the women who washed their linen in the stream. We joined the blue-gowned reapers on the slopes, and reaped with them; but the sun shone upon us and made our backs ache, so we retreated into the shade of the forest and read Rousseau, and gloried in the "return to nature" and the "dignity of labour." How we loved the forest, with its green glades, colouring bracken, purple heather, grassy sward, yellow toad-flax, and wild thyme, and the twitter of the birds, the glitter of the butterflies, the lowing of the kine, the bleating of sheep, and all the native and natural things of the country! We made tea in the depths of the forest, we carved "Rosalind" on the bark of the trees, and we wrote verses about her, and pinned them to the tree trunks, "as they did in the Golden World." But we never met Jaques, and I was disappointed; so Pompilia recited all his speeches to me. At home, too, we made ourselves useful. Sometimes we sat in the kitchen and helped madame to shred the crisp young lettuce, and listened to the improving remarks of the *chef;* then we gathered pears in the garden, and walked with the cows to the river, and watched the pigs being fed, and threw corn to the hens, and played with the calves, and so "fleeted the time carelessly." But it all came to an end at last, and the dream vanished, as dreams will. Elspeth wept when we went away, and the old man gave us roses, and the *chef* came to the door and waved us "good-bye." The man of the pitchfork drove us to the station, the babies shouted after us, the blacksmith came from his anvil and smiled at us, and the very cows lowed with melancholy. "It is easy to be good and happy in the Golden Age," I moralised, as the train bore us away. "It is tramcars and big cities that make for unrighteousness," said Pompilia. "Yes," I said; "and now I go once more to the

> 'Squalid, hideous town, where streams run black
> With vomit of a hundred roaring mills:
> Hither occasion calls me.'"

[In connection with a visit to the Belgian Ardennes, we may mention that the Belgian State Railways claim that their rates are the cheapest in the world. Season tickets are now issued available for fifteen days, which enable the holder to travel all over Belgium in every direction on the Belgian State Railway lines (2,450 miles in extent), including one passage each way between Dover and Ostend, at the following remarkably low prices—namely, £1, 9s. 5d. (3rd rail, 2nd steamer); £2, 3s. (2nd rail and steamer); £2, 5s. 11d. (2nd rail and 1st steamer). A photograph of the holder measuring $2\frac{1}{4}'' \times 1\frac{1}{2}''$ must be supplied to be affixed to the ticket. Tours can be extended by means of their *Combiné* or *Rundreise* ticket system to Holland, Germany, Austria, Switzerland, Scandinavia, etc. The fullest particulars as to these season tickets are given in their beautifully illustrated handbooks, which are issued gratuitously to teachers upon application to the head office of the company, at 53 Gracechurch Street, London, E.C.—ED.]

To Belgium belongs the honour of being the first Continental nation which has established a state railway. This took place as far back as the year 1834. The first line of railway was opened to the public in the year 1835, when 421,439 people travelled on it; and the great success of the undertaking at starting has steadily developed and increased until the present time, when we find that, considering the size of the country, Belgium has the largest mileage of railways of any Continental country.

QUAINT CORNERS IN SWITZERLAND.

ZÜRICH.

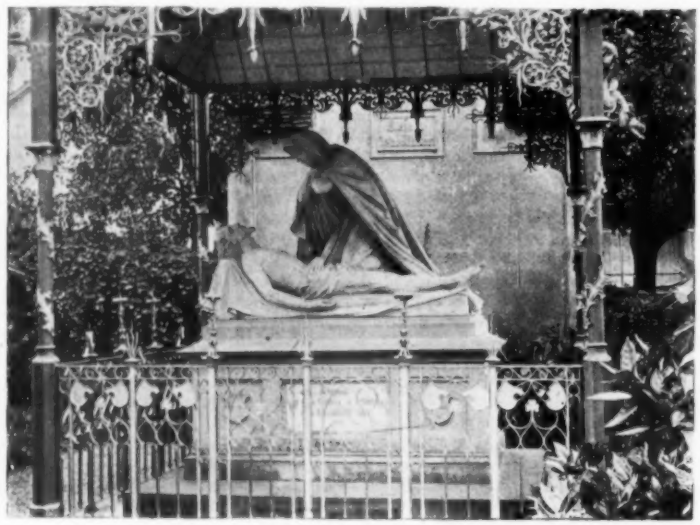
TO the majority of tourists the word "Switzerland" recalls pleasant memories of beautiful lakes, rushing rivers, roaring waterfalls, wondrous gorges, tree-clad hills, mighty mountains crowned with snow and fringed with glaciers. Magnificent as are these natural features, there are amidst the haunts of man scattered throughout the country specimens of quaint architecture and relics of a distant past which form a never-ending source of interest. "God made the country, and man made the town," says Cowper; while Pope declares that "the proper study of mankind is man." To those who find enjoyment in making the acquaintance of the manners and customs of the people of other lands in bygone times, we need offer no apology for this article; to others we hope to suggest the possibilities of added delight when they again visit the "playground of Europe." This object will be best attained if we specially direct attention to a few towns which may be easily reached.

Such a city is Zürich, beautifully situated where the river Limmat issues from the famous lake. The exquisite pictures of mountain, woodland, and water to be seen from the Quai-Brücke and the Alpen-Quai are well known. Everybody ascends the Uetliberg. But the town in which Pestalozzi was educated, Ulrich Zwingli preached the Reformation, and Hans Waldmann displayed his diplomatic genius, is full of interest to the earnest student. Starting from the Bahnhof-Brücke, we make our way along the Limmat Quai, and immediately notice the remarkable old dwellings heaped in a heterogeneous mass on the opposite side of the river. An ancient covered bridge of wood, beneath which swirls the green Limmat, unites the left bank with an islet in mid-stream. Ere long we reach the handsome stone Rathhaus, in Italian Renaissance style, built on, or rather over, the river. At its south-east corner is a mural tablet bearing the inscription, "This building was erected, 1694–1698, on the site of the former Council House. Here were held, in the Cantonal Council Chamber, the sessions of the Federal Diet; and on November 10, 1859, in the Government Council Chamber, ensued the signing of the Peace of Zürich, whereby Lombardy was united with Piedmont." Near by is the quaint old Grossmünster, said to be erected on the spot where the first martyrs to Christianity in this district perished. It is a plain, unimposing structure, devoid of architectural distinction or beauty both within and without. Yet we would fain linger here; for is not this ancient cathedral indissolubly linked with memories of Zwingli, the founder of the Reformed Church of Switzerland? Soon after he left Ensiedeln for Zürich, the man of God was stirred by the movement commenced by Luther. Henceforth, in spite of all opposition, he toiled for the purification of the church he loved. It was from No. 13 Kirchgasse that "he went forth, October 11, 1531, with the Zürich army to Kappel, where he died for his faith." In 1886 a fine bronze statue, representing this heroic "fighting parson" with a Bible in one hand and a sword in the other, was erected on the quay behind the fifteenth-century Wasserkirche. The Zwingli-Platz, Rüden-Platz, Kirchgasse, and the narrow, winding thoroughfares immediately around the minster, will amply repay a morning's investigation; for this corner of the city was the centre of action during the epoch-making years of the sixteenth and seventeenth centuries. The half-dozen ancient guild-houses still remaining are even finer than those of the Grande Place in Brussels.

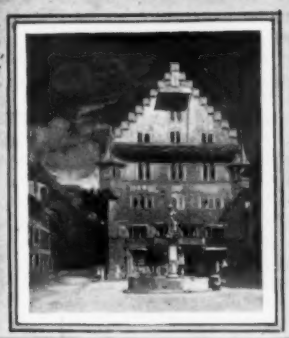
ZUG.

Less than twenty miles from Zürich, nestling between beautiful hills, is the old-world town of Zug. During our sojourn there we did not meet an English-speaking tourist; yet Zug is one of the most charming, interesting, and hospitable spots in Europe. While Lucerne, Interlaken, and Geneva are thronged with surging masses of travellers "doing" the prescribed sights of the place, this delightful old town jogs on in the same leisurely, work-a-day manner as it did four hundred years ago. Of the thousands of folks who annually visit Switzerland in search of rest and

relaxation, many press towards the great centres of population, where they find exactly the opposite of that which they seek. Escaped from the enervating worries of a busy town, they promptly hasten to some great cosmopolitan caravansary where rest is a thing almost impossible, and the re-establishment of health a mere dream. Their every action is determined by the locally-accepted code of conduct and decorum, and throughout their waking hours they render homage to the twin goddesses of fashion and etiquette. At Zug a man may do what he will. Probably the best general view of the place is to be obtained from the northern end of the lake, just where the Platzwehre, the shadiest promenade in the country, comes to an end. It is a tangled mass of white and yellow towers, gray spires, warm-brown roofs, and green foliage, all mirrored in the calm waters beneath. Form, colour, grouping, repetition alike are there. There is nothing grand or magnificent in the view; it is simply pretty—as pretty as any picture to be seen in Switzerland. In the fourteenth century Zug was a compact village stretching from the shore to the Zytthurm and what is now known as Grabenstrasse, and consisted chiefly of three long parallel streets. On March 6, 1435, the lowest of these suddenly crashed into the lake, twenty-six houses disappearing as if into a giant's maw. The Oberstadt and Altstadt still remain—fine specimens of mediæval work. The ancient towers, walls, arches, churches, and houses are remarkable. One would need to seek far for a quainter thoroughfare than the Altstadt. On one side the high buildings of massive stone rise directly from the cobbled road; on the other a paved way, several feet above the general level, is gained by flights of steps. No two houses are alike. In some the windows are large and numerous, in others small and few; in some the upper stories project far over the street below, while the roofs project further still. The white, yellow, pink, pale green, and gray fronts are rendered still more gay by pots of geranium, hydrangea, fuchsia, and azalea; climbing plants hang about the doors and windows. Everything is clean; everybody is bright. When we reflect on our visits to Switzerland, we are bound to confess we have experienced more delight in the Altstadt at Zug than in the famous Höheweg at Interlaken. Another fine old street is that which slopes gently from the lake-side up to the union of Neugasse with Grabenstrasse. As soon as the artist or photographer beholds it he prepares for work, especially if he arrives when the afternoon sun intensifies the manifold charms of the scene by its play of light and shadow. On the left is a short line of white-fronted dwellings, with rare old windows hanging over the roadway, and partly covered with foliage; opposite rises the gaily-frescoed Rathhaus, dating from the end of the fifteenth and the commencement of the sixteenth centuries, and regarded by archæologists as a specimen of the highest style of that period. At the end rises the ancient Zytthurm, as fine a tower as we have ever seen. In the long ago its belfry was utilised as a prison, the unfortunate wretches being confined in small wooden chambers so situated that the loud clanging of the massive bell aroused the prisoners from their reveries or their slumber every quarter of an hour. What an example of misdirected inventive genius! With the exception of the electric lamp which hangs in the middle of the street, this quaint corner has remained unaltered for ages. The most famous ecclesiastical edifice in Zug is the fifteenth-century Church of St. Oswald, which Rahn, in his *Histoire des Beaux-Arts en Suisse*, declares to be the most beautiful Gothic structure that Switzerland possesses, no other exhibiting such perfect symmetry of form both inside and out. In the small burial-ground adjoining is a magnificent canopied tomb representing the weeping Mary kneeling at the feet of the dead Christ. The sculptor (Alois Brandenberg) and the artificer in iron have vied with each other in producing a monument whose beauty and pathos appeal to the casual visitor and the art connoisseur alike. The centre of life is the mediæval Kolin-Platz, a fine open space flanked by quaint old dwellings, and backed by the unique old-world Hotel zum Ochsen. In the middle is a beautiful fountain surmounted by an armed statue of Peter Kolin, the local hero, who fell at Arbedo in 1422 defending his country's flag. In the long struggle for liberty which laid the foundation of the brave little republic the men of Zug played no mean part, nor are their descendants lacking in that fervent patriotism that leads them to commemorate the great events of their stirring history. We had the good fortune to be at Zug last year on the 1st of August, and ere we started on our day's exploration of the beautiful lake, we were informed by our host, Herr Bossard—a most admirable man—that there was to be that evening a local celebration of the four hundredth anniversary of the establishment of a free Switzerland. From our "coign of vantage" on the stone balcony projecting over the entrance hall of the Hotel zum Ochsen we had an excellent view of the scene of enthusiasm below. From the multitude of towers and steeples of the town the bells chimed forth merry peals from 7.45 to 8.15, while the Zugois and the good folks from the neighbouring villages began to throng the Platz. It was a happy yet earnest crowd—men in straw hats; boys without jackets or vests, displaying their sombre-hued flannel shirts; women and girls with dark skirts, cotton blouses, and bare heads. Never did the setting sun shed its paling light on a nobler sight—a concourse of stolid human beings whose hearts throbbed with love of liberty. About 8.30 the local band of over twenty musicians performed a grand selection from the operas, and as they concluded with a perfect rendering of "Ah che la morte," it seemed almost impossible that the whole of these men were natives of the little town whose entire population is but 6,000. We have never heard more artistic playing, and were not surprised when our host informed us that the local representatives had recently gained the premier position in a band contest open to the entire republic. A selection from Mendelssohn's works followed, and then a choir of twenty-four men stood beneath our balcony and sang a number of *volkslieder*. The style, tone, balance, and execution were splendid, and aroused intense enthusiasm. Men cheered and dogs barked; truly it was good to be there! We caught some of the prevailing spirit, and applauded as loudly as any. So the concert proceeded, and about 9.30 concluded with a grand performance of patriotic songs, not the least stirring of which was "Rule Britannia." That night we shall never forget; then we, for the first time, fully appreciated the grandeur of the Swiss character, and the living reality of their deep devotion to national heroes.

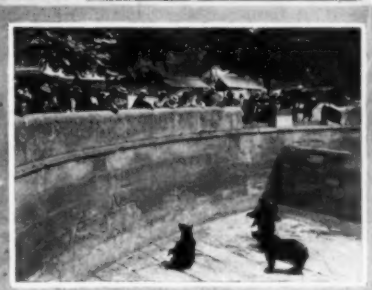


IN THE CHURCHYARD, ZUG.



A Quaint Hotel, Zug

An Old Corner in Zug



The Bear-Pit, Berne

An Old Street Berne

Covered Street, Berne

The Ogre Fountain Berne

Wooden Bridge Thun.

On Outer Wall of Cathedral, Lucerne

Old Zurich

The Main Street, Thun

Quaint Corners of Switzerland

LUCERNE.

It is but a short journey from Zug to "lovely Lucerne;" and though we have frequently revelled in the delights of the Schweizerhof Quai, the glorious prospect from the Gütsch, the majesty of the Rigi, the Stanserhorn and Pilatus, the gay flowers and plashing fountains of the Quai National, and the soul-stirring pathos of the famous "Lion of Lucerne"—the most eloquent piece of stone in the world—our chief joy has been found in the quaint old quays and thoroughfares skirting the rushing Reuss. Where in Europe can be seen anything finer than the ancient wooden Kapellbrücke, with the unique Wasserthurm at its angle, and its roof decorated with one hundred and fifty-four paintings of scenes in the lives of St. Leodegar and St. Mauritius; or the older Spreuerbrücke, over which Elsie and Prince Henry rode, observing the "Dance of Death" above their heads? Picturesque houses of the sixteenth and seventeenth centuries abound; strange old sculptured pumps may be discovered in out-of-the-way corners; Conrad Lux's beautiful Gothic fountain, erected in the Weinmarkt in 1481, is an exquisite gem in a country justly famed for this form of art; the stately Rathhaus, standing on its solid arches, and surmounted by its gay tower, is more imposing than that at Zürich; the gray ramparts of the Musegg, with its nine many-shaped towers, loom high over all. Near the eastern end of the Schweizerhof Quai, in a commanding position, stands the Hofkirche of St. Leodegar, the chief Catholic church of the town. Its twin slender towers, erected about 1506, form prominent features in any view of Lucerne. It contains much clever wood-carving, executed at a period when the art was highly cultivated in Switzerland. Just outside the main entrance is a remarkable piece of stonework, sculptured in a niche of the wall. The group of figures is worthy of close examination, the minute detail in the garments being specially fine. Running round the church is an arcade of simple but beautiful design, which forms the last resting-place of many of Lucerne's sons and daughters. On the walls are several frescoes painted by the master-hand of Deschwanden. Fine monuments and tablets of black and white marble are inscribed with the loving testament of the friends of those who lie in their long sleep beneath the stone floor. Artistically-worked frames of wire enclose photographs of the departed. No sound of the bustle and tumult of the jostling multitude below ascends to this secluded spot; all is still, save for the joyous twittering of the birds and the rustle of the leaves in the pretty little cemetery between the arcade and the church. Here one does not think of the sting of death, but only of rest after life's fitful fever.

STANS.

To those who desire to see a fine example of the smaller Swiss towns we would suggest a trip to Stans. The steamer may be taken from the Bahnhof Quai at Lucerne to Stansstadt, and the journey completed on foot or by means of the electric tramway. Stans is charmingly sequestered amidst fruitful orchards at the foot of the steep Stanserhorn. It consists of a few quaint streets of old stone houses and wooden *chalets* clustering around the open space in which stands the handsome parish church. The Burial Chapel is a unique structure. Its low, vaulted roof rises gracefully from the simple walls, from which hang clusters of crosses, hearts, etc., made of wax. At one end is the pretty altar, at the other heaps of human bones and rows of skulls, each bearing the name of its former owner. Close to the church is the splendid monument to Arnold von Winkelried, who, by his noble self-sacrifice on the field of Sempach in 1386, enabled the Swiss to gain a great victory over Duke Leopold of Austria.

THUN.

A town which for quaintness perhaps surpasses Zug is Thun, beautifully situated on the "rapid green Aare." To most folks visiting the Bernese Oberland, Thun is a mere name associated with a mediæval castle and a church perched on a massive rock, and a hurried gathering up of baggage preparatory to embarking on the steamer at Scherzligen. What a wealth of interest they leave untouched! A week would not exhaust its power to please. Thun is essentially an ancient town; it has remained unchanged for centuries. Except along the river banks from the upper bridge to the lake, really modern structures are curiosities. The chief thoroughfares certainly do not form a cyclists' paradise, for the roads are surfaced with *pavé* more irregular than any to be found in France or Belgium. We presume this fact, with the meagre importance of any local industry, accounts for the marked scarcity of vehicular traffic. After enjoying the magnificent views of mountain and lake to be obtained from the fine old castle of Zähringen-Kyburg, and the pavilion at the corner of the churchyard, the visitor cannot better employ his time than by walking wherever his fancy leads him. Should the day be wet, he can betake himself to those fine old streets where the upper stories of the houses, supported on massive arches, project as far as the roadway. The shops are beneath. The solid masonry has stood for centuries, and will remain for centuries after the jerry-built "desirable villa residence" of the London suburb has become a rubbish-heap. Perhaps the most picturesque corner is to be found at the back of the Freienhof Hotel. Nor is Thun without its fine old square, for the Rathhaus-Platz is full of interest. On one side is the typical sixteenth-century town hall; opposite is a row of shops, above which the gray-stone turret of the castle appears: another side is occupied by the Hotel Krone—a remarkable piece of architecture, but an excellent hostelry; the fourth side is formed by a number of converging, narrow, arcaded streets, through which the good folks wander as though they had fallen asleep there two or three hundred years ago, and were not yet fully awake. Certain it is they would find their surroundings entirely unchanged! In the middle of the Platz is a pretty fountain, whose natural beauty is greatly enhanced by a pyramid of palms, fancy grasses, geraniums, and petunias tastefully arranged on its summit. Undoubtedly *the* street of the town is the Obere Hauptgasse; we have never seen anything bearing the least resemblance to it elsewhere. A characteristic road of cobbles, flanked on each side by miniature shops, runs the whole length of this High Street. There are no sidewalks. Mysterious, low, narrow, dark passages lead to back thoroughfares. At various intervals are flights of stone steps leading to the top of these shops, whose perfectly flat roofs are paved with flagstones, forming fine terraces about twelve feet wide. These are rendered still more picturesque by scores of fine, flourishing shrubs planted in tubs, and a fringe of graceful iron palings erected to prevent pedestrians from falling into the roadway below. On these balconies children play, women gossip while their hands are deftly employed in making lace, men lounge and smoke. It is the busiest promenade in Thun. Rising from the rear of these terraces are lofty buildings five stories high, with wonderful sloping roofs projecting several feet beyond the house fronts. The lowest "floor" of each is a shop, having "no connection" with that beneath. On Saturdays the Hauptgasse is the great market of the town, and the animated scene to be witnessed there on a fine summer morning, when each side of the road is lined with a row of stalls whose wares are sheltered from the sun by picturesque awnings, is as beautiful as it is quaint.

BERNE.

Less than twenty miles from Thun is the grand old city of Berne, the seat of the Swiss Government. Although one may see the "lions" of the town in a day, an entire week will scarcely suffice for the visitor who desires more than a passing glimpse of its many features of interest. Undoubtedly its chief attraction is to be found in its streets, the most notable of which is the broad thoroughfare, about a mile long, which, under different names, leads from the southern end of the railway station to the Bärengraben, or Bear-pit. We have wandered along this street, inspecting the contents of its magnificent shops, both when a deluge of rain flooded the roadway and when the summer sun blazed from a cloudless sky. On neither occasion was an umbrella or a parasol necessary, for on each side the upper portion of the giant houses stretches as far as the edge of the pavement, forming a continuous covered arcade, like a seventeenth-century Rue de Rivoli. Along the centre of the street runs a series of handsome fountains surmounted by curious statues. Of these, perhaps the Bagpiper Fountain in Spitalgasse is the

most beautiful, and the Ogre Fountain in the Kornhaus-Platz the most quaint. At the top of the Marktgasse is an ancient prison tower, originally built in 1266. Further on, beyond some glorious old guild-houses, is the Zeitglocken-thurm, erected four hundred years ago, and recently decorated with fine frescoes representing the four ages of mankind and the four seasons of the year. It contains some ingenious clockwork which, at the striking of each hour, sets in motion a procession of bears, a crowing cock, etc. In beauty this clock-tower rivals the Tour de la Grosse Horloge of Rouen, and in the marvellous accuracy of its mechanism it will compare with the famous clock in Strasburg Cathedral. Quite close is the exquisite Burgundian late-Gothic Rathhaus, placed here immediately after the great fire of 1405, and restored in 1867. It is beautifully decorated with an elegant double staircase and a monumental frieze. No more pleasing specimen of architecture is to be found in Switzerland. An hour should certainly be spent in the magnificent cathedral, the interior of which is exceptionally rich in carving, sculpture, and stained glass. In the north-east corner is Tscharner's *chef-d'œuvre*—a wonderful group in white marble, representing the weeping mother of Jesus kneeling at the feet of her dead Son. The mingled expression of desolation and hope on the Virgin's face lingers long in the memory. There is much more to be seen in Berne, but we trust we have written sufficient to afford some indication of the variety of attractions the town possesses to those in search of the "quaint."

In conclusion, we would offer a few words of advice to the conscientious photographer. While much of the mountain and lake scenery of Switzerland can be excellently reproduced by means of a hand camera, it will be found quite inadequate for the work to be done in the towns of which we have spoken. While open street scenes are best obtained by quick shutter exposures, the "swing-back" and "rising-front" are essential in order to ensure perpendicular lines in architectural studies. Moreover, where "time" exposures are necessary, as in the arcades of Thun and Berne, the cloister-like cemetery of Lucerne, and church interiors, the tripod is indispensable. Very rapid plates, over-exposure, and impatience will inevitably lead to disastrous results. The careful art student who has a knowledge of pictorial composition will be able to secure a series of views which will in themselves possess much intrinsic value, and prove an unending source of interest and delight to his friends as well as to himself.

A CYCLE TOUR TO BERLIN.

THE tour outlined below can be strongly recommended as pleasant, and profitable, and inexpensive—the riding being particularly easy, as the roads are level throughout.

A very limited knowledge of German will suffice for getting necessaries; but as English is not spoken to any great extent, one of the party should have at least a nodding acquaintance with the language of the Fatherland.

Clothing.—By sending a change of underwear to Berlin (*poste restante*), it will be unnecessary to carry more than a week's supply of clothing in the *tasche*. The German cyclist affects a get-up somewhat gayer than that of the Briton. If the tourist would escape being stared at, even in large towns, he will, upon his arrival in Hamburg, wisely assimilate his dress as far as possible to that obtaining in the Fatherland.

Dogs are so great a nuisance that no German cyclist ever dreams of touring without carrying either a whip or a good supply of bombs whereby he may drive away offending curs.

Passport.—This is not compulsory, but is very useful, especially when claiming letters at the various post-offices.

Having now set the fully-equipped cyclist astride on his machine, we now proceed to give our

Itinerary.

1st Day—London to Peterborough (80 miles).
2nd Day—Peterborough to Grimsby (65 miles).
3rd Day—On board the *Northenden*.
4th Day—Arrived at Hamburg from Grimsby, 7 a.m.
5th Day—Started 2.45 p.m. Hamburg to Boizenburg (48 miles).
6th Day—Boizenburg to Kyritz (98 miles).
7th Day—Kyritz to Berlin (63 miles).
8th, 9th, 10th, and 11th Days—At Berlin.
12th Day—Berlin to Plaue (62 miles).
13th Day—Plaue to Allersingersleben (70 miles).
14th Day—Allersingersleben to Hanover (73 miles).
15th Day—Hanover to Bückeburg (41 miles).
16th Day—Bückeburg to Rheine (89 miles).
17th Day—Rheine to Enschede (33 miles), then by train to Rotterdam, whence by boat to Grimsby, arriving at 4 p.m.
18th Day—Grimsby to Tattershall (43 miles).
19th Day—Tattershall to London (125 miles).

Time would, of course, be saved by going by train to Harwich and thence by boat to Hamburg; but as the return fare (saloon) from Grimsby to Hamburg is only 35s., and as bicycles are allowed to go free of charge, and as, in addition, the return may be made from either Antwerp or Rotterdam, we travelled *viâ* Grimsby, and we advise intending tourists to do the like.

HAMBURG.

Concerning the fine town of Hamburg nothing can here be said, except that it will well repay a visit, if only to see the pleasant Alster and the immense docks. When we set out from Hamburg, we resolved to take Friedrichruh *en route*. The roads were very rough for the first five or six miles, but by dint of riding on the paths—as is permitted in Germany, so long as the passing pedestrian is not incommoded—we jogged along, keeping, of course, always to the right, in accordance with the Continental rule of the road. The country was uninteresting, and even desolate, vegetation not taking kindly to the sand, which everywhere makes itself unpleasantly evident. About five-and-twenty miles from Hamburg we turned sharply to the left, and made our way for five miles over an execrable surface like the seashore, when we found ourselves outside the gates of Friedrichsruh. Feeling thirsty, we made trial of our Ger-

man in "Bismarck's Lustgarten," where we sampled the *brause limonade*, a concoction flavoured with raspberry, which is drunk throughout Germany much as ordinary lemonade is with us. To the cyclist drinks are so important a consideration that we may seasonably devote a few words to them. Soda and milk (*selter und milch*) may be obtained everywhere, and an excellent drink it is. Ordinary lemonade (*citronen limonade*) is usually obtainable, and this too of good quality. Beer is the national drink, and can always be got. Pilsener and Bier Baierisch are the two commoner sorts, and a small glass (*ein kleine*) costs usually 1d., the cost of a large glass (*ein grosse*) being 1½d. In the vicinity of Berlin is to be obtained a delectable drink known as white beer (*weiss bier*). It is drunk out of vessels resembling enormous sugar-basins, with a diameter at the top of not less than 18 inches.

"À BERLIN!"

Leaving the Lustgarten, we made tracks for Lauenburg, passing on our way through Bismarck's forest, the going being simply perfect, and the scenery very taking. At Lauenburg we "tea'd" on chocolate, bread and butter, and eggs, for which savoury mess we paid mine host, who was all attention, the large sum of 1 mark per head—a very pleasant foretaste of the reasonable prices that prevailed, as we afterwards found, everywhere except in the large towns, where they ranged slightly higher. Getting astride once more, we proceeded to finish our day's jaunt, arriving at Boizenburg, a charming little place beautifully situated on the Western Elbe, at 10 p.m. We were soon ensconced in the Rothes Haus (Red House), where we found a party of about a dozen pot-paunched wassailers, who insisted upon including us in the merry circle. Nothing loath, we joined the festive board, and made trial of the English of the roisterers. It was bad; and in this respect it resembled, with three honourable exceptions, the English that was meted out to us during the whole of our peregrinations. One old fellow bellowed out, "Made in Germany," and then immediately afterwards vociferated, "My heart's in the Highlands," which he spouted so correctly as to almost delude us into the belief that he really did know English. "Singen Sie es, mein Herr?" asked the spokesman of our party, and sure enough sing it he did. At Kyritz we had an exactly similar experience, the song this time being "The Last Rose of Summer." The wisdom of this parrot learning of English did not impress us very much, especially as our German had to be exclusively relied upon for the rest of the evening, which, by the way, was very animated, the "Highland" gentleman committing much *lèse-majesté*, to the concern of the landlady, and to the accompaniment of potato spirit and beer, which he tried, unsuccessfully, to foist upon us. In the morning we breakfasted sumptuously on rye bread and butter, eggs, and chocolate—bed, breakfast, and evening's entertainment, for both, totalling up to the immense sum of 5 marks! On the morrow we were awheel at 6.30 a.m., and about 10 we rode into a stately avenue of limes about two miles in length, which was the imposing entrance into the town of Ludwigslust, a small place so orderly in the arrangement of its houses as to remind one of a toy city. Here is a château of the Duke of Mecklenburg-Schwerin, who occasionally honours the natty little place with his august presence. The town ends in a similar leafy avenue, which we soon left behind us, heading for Perleberg, where we arrived at 5.50, in time for high tea, which consisted of a *côtelette* of veal well cooked, chocolate and cakes—price, 1 mark per head. A quaint old-time stone statue adorns the market-place of Perleberg, to the right of which is the *gasthof* where we were treated so hospitably. After seeing the local fire brigade drill we departed, and reached the Gasthof zum Landhaus at Kyritz at 11 p.m. Here again we found every comfort—the billiard-marker taking quite an interest in our weal and in that of our bikes.

At 10 a.m. the next morning we set out for Berlin, through avenues of apple and cherry trees, by way of Friesack—where we met a very bad specimen of the globe-trotting Yank—Nauen, and Spondau, the site of the much-guarded Julius Tower, containing the war indemnity of six millions in hard cash paid by the French. We reached Berlin at midnight, and had some difficulty in getting a hotel. Luck took us to 79 Invalidenstrasse, near the Lehrter Station, where Herr Robert Günther took us in and did for us handsomely at his Restaurant Bahnschlössehen, charging 2½ marks for bed and breakfast. We dined daily at one or other of the many well-equipped Schultheiss Restaurants, where a good dinner of four courses can be obtained for 1¼ marks, and an excellent one for 2 marks. Awaiting the repair of a bicycle, we stayed at Berlin four days, strolling down Friedrichstrasse and Unter den Linden, and seeing the palaces, museums, picture galleries, zoological garden, beer gardens, etc., not forgetting to "do" Charlottenberg—where lies Friedrich der Grosse, whose portrait meets you at every turn—and Potsdam, with the mausoleum of Unser Fritz, whose untimely death so mightily stirred his many English friends, not merely because he was the son-in-law of Queen Victoria, but by reason of the undoubted manliness of the ill-starred emperor of a few days.

"VERBOTEN!"

Space permits no further reference to this enforced stay at Berlin; but let it be noted that the capital is a fine city, with plenty to interest and amuse. Starting out of the city on the morning of the fifth day by way of Friedrichstrasse, we were rudely stopped by a policeman, who sternly yelled "Verboten!" which being interpreted means that this main artery is forbidden to cyclists. Accordingly we reached the Brandenburg Thor (gate) by a detour, and steered for Potsdam, where we lunched, if not sumptuously, at least substantially, at the Restaurant Belle Vue, on well-cooked veal cutlets, washed down with thirst-quenching *weiss bier*—the charge being only 1½ marks, albeit that the restaurant was situated opposite the palace of Sans Souci. The scenery here is very pleasing, as the Spree widens out into picturesque lakes, and the country is hilly and wooded.

HOMEWARDS.

Brandenburg was reached at 5.30, and in company with Herr Steilitz, a German cyclist hailing from Magdeburg, we rolled along for this city, but were pulled up at Plaue by a thunderstorm of great severity lasting far into the night. We stayed at the Hotel zum Goldenen Stern—drinks, bed, and breakfast, comfortably served, be it remarked, *al fresco*, costing only 5½ marks for the two of us. Next day we travelled *viâ* Bourg, Möser, Magdeburg—where we lunched, and had a good view of the Brocken in the distance—to a little place with a long name, to wit, Allersingersleben. We joked with mine host concerning the unconscionable length of this name, and then retired to a very comfortable bed. Our notes record here "shrew and screw," which refers to the wife of mine host, who gave us a very poor breakfast and charged the price of a very good one. Hanover was reached the next day by way of Helmstadt, Brunswick, Piene, and Lehrte. We stayed at Mussman's Hotel in the Aegidien Platz, paying 3 marks for a comfortable bed and an excellent breakfast, and a mark each for the delectable sweet omelet which constituted our luncheon.

We were greatly struck with the beauty and the trimness of this city, whose citizens more closely resemble the English than any Germans we had yet met. At 4.15 we left Hanover, and proceeded to Bückeberg *viâ* Rodenberg. Hitherto we had seen no very distinctive costume, but between Rodenberg and Bückeberg the peasantry wear a very peculiar dress—namely, a large black headdress very full at the sides, huge pearl earrings, and red skirts with a violet border. The vicinity of Rodenberg is very picturesque. Our lodging at the Furstenhof was both cheap and comfortable. The morrow saw us *en route* for Rheine by way of Minden, Lübbecke, Osnabrück, and Ibbenhuren, the latter part of the journey being through an extensive forest. At Rheine is a cotton factory fitted up with English machinery, and the same applies to many towns within a radius of twenty or thirty miles. We were lucky in our hotel at Rheine, comfort and good fare being forthcoming at the same scale of prices as given above. In the morning we crossed the frontier at Gronau without let, hindrance, or search, and rode through a shady avenue to Enschede, whence after lunch we took train to Rotterdam, arriving in time to catch the steamer for Grimsby, whence we biked home to London.

PILGRIMS OF THE RHINE.

"HOW little it requires to make a journey pleasant when the companions are our friends! Nothing can be duller than these banks, nothing more delightful than this voyage." Thus spoke the heroine of Lord Lytton's *Pilgrims of the Rhine*, as she sailed past the town of Gorcum, as it is given in that book, or Gorinchem, as it stands on the maps—neither spelling, of course, giving much clue to the pronunciation of the name. Again and again we had been told that nothing could be duller than the lower Rhine, generally by people who had not seen it; and many of the same people declared that the upper (or middle) Rhine was also dull, or at least disappointing. Yet we refused to be persuaded. We had at least poor Gertrude's solace, friends for companions; and we believed, moreover, that no place can be uninteresting which one wishes to see. Doubtless the Sahara is somewhat monotonous, and yet a good many of us would find it intensely interesting—for a time.

The "castled crag of Drachenfels"

Here we were at Rotterdam, therefore, with the Black Forest as our objective, but we had deliberately chosen to waste three whole days and four nights by the way as Pilgrims of the Rhine. And it must be added that we did not regret our choice of route, because our route was part of our holiday. It is not likely to become popular with the tourist in a hurry.

We arrived on Thursday forenoon; the Rhine steamer starts early next morning, so the day is devoted to the Hague and Scheveningen. We had taken the necessary precaution of engaging cabins a week or so in advance, and the Netherlands Company are so thoughtful of the comfort of late risers that they arrange for us to sleep on board the night before starting. There is cargo about; no matter, we have just crossed the North Sea, and can excuse that. Besides, our berths are luxuriously soft and delightfully roomy. The writer remembers with pleasant emotions that stateroom extending right across the stern, with a good window on either side of the boat, and regrets that the sea-going steamers do not provide similar accommodation.

We appear on deck next morning just as the *Rotterdam* swings clear of the quay, and find the whole panorama of the river a scene of the most varied and interesting activity. The variety of craft passing down to the great seaport was immense, and to us had only one feature in common—we had never seen them before, outside Dutch pictures. Breakfast did not interrupt the view, as that was served for us upon a spacious bridge-deck under a welcome awning. And here it may be noted once for all that the cooking on board was entirely in accordance with Baedeker's note regarding the passenger steamers on the middle Rhine—"in the style of the larger hotels." There are differences between the boats, or rather between the stewards, as we afterwards learned, but the remark quoted may stand.

The panorama of Dutch river life extended throughout the whole day, and included glimpses of Dordrecht, Salt Bommel, Tiel, Gorinchem, and Nijmegen. In the evening, German territory was reached at Emmerich, where the ladies of the party had the pleasure of paying over sixpence to the customs revenue of the Fatherland for the privilege of carrying with them their own tea—a totally unnecessary proceeding, as they afterwards found.

We pass the great coal and iron district of Germany during the night, but console ourselves by the thought that one chimney stack is pretty much like another after all, and we have seen several at home. Next morning soon after breakfast we reach Düsseldorf, and decide on covering the distance between this and Köln by rail, to give us longer time in the latter town. The luxurious "D" train soon brings us to the shadow of the Dom, and we find the hours slip by all too fast in the quaint and interesting city. Our boat arrives towards evening, and after supper we are once more on our way up stream.

Next morning, Sunday, we find that we are over an hour behind our time-table—not an uncommon experience in the later autumn, when the white night fog often lies over the river from bank to bank until dispelled by the morning sunshine. We had now entered on the Rhine of the guide-books, the "Castled Rhine," with all its charms—quite a different river from the Dutch Rhine, and the only one seen by most tourists.

We need not describe the localities, which have been so often and so well or so badly described already. Our great anxiety was to reach Assmannshausen early enough to allow a visit to the great national Denkmal opposite Bingen, and a descent to Rudesheim in time to catch the swifter "express boat" which would carry us to Mainz to join our own once more. Happily we gained our object, else our Rhine pilgrimage would have been shorn of one of its chief glories.

The climb from Assmannshausen by the rack-and-pinion railway up to the Niederwald, the views over the wide and rich country from the Magic Cave (including Bingen and the tower of its immortal bishop), the walk through the woods to the great monument which commemorates the unification of Germany, the descent (again by rail) through the finest vineyards of the Rhine to Rudesheim, the refection there which included the choice product of these last, and the somewhat un-Sabbatical journey by the gay Sunday express boat to Mainz—all these are permanent memories to every member of our pilgrim band. The final stage of the Rhine pilgrim-

age was made during the night, and next morning found the *Rotterdam* approaching Mannheim, the terminus of the steamboat route.

From Mannheim to Heidelberg is a short run across the flat Rhine plain, and soon the edge of the mountain district comes in view—the Odenwald to the north of the Neckar valley, and the Schwarzwald to the south of it—like a line of cliff fronting the green sea over which we are borne. Heidelberg, with its wonderful castle, where reposes the great Tun, equally wonderful in its way; the Neckarthal with its villages, in one of which, Rockenau, we spent some time with a most interesting "holiday colony" of schoolboys from Mannheim; southwards to Freiburg, a larger if less famous university city, claiming the finest Gothic spire in existence; the Titisee, a mountain lake amid true Highland surroundings (including fine hotels, with a tariff the very reverse of Highland), to reach which one passes from the "Kingdom of Heaven" through "the Valley of Hell;"—these things were the end to which our Rhine pilgrimage was only a means. And while the end amply justified *any* means whatever, yet, as we pilgrims look at it, the means was a sufficing end in itself.

The journey down stream naturally takes less time. The pilgrim has the advantage also of passing by daylight those scenes which were lost in the darkness during the upward run. We suffered delay by fog on the return journey, and found it necessary to take train to Rotterdam in order to catch our steamer for home. In such a case the Netherlands Company refund to the traveller the price of that portion of his ticket which he does not use.

The cost of such a pilgrimage is extremely moderate. The steamboat ticket is absurdly cheap. A separate charge is made for cabins, which should always be secured well in advance. The tariff for meals and refreshments is also reasonable. If one has plenty of time, there is much of interest to be seen on the Rhine in this unromantic way. The traveller will meet few or none of his countrymen; the pace is too slow. But, on the other hand, he will see phases of Dutch and German life which cannot be seen by the tourist in a second class railway carriage. He will find time to make pleasant and useful acquaintances in the course of the 365 miles' sail, and he will have the satisfaction of knowing that his steamer has climbed to a height of nearly three hundred feet above the sea without passing through a single lock—if such a fact can give him any satisfaction.

NOTES ON CYCLING.

THERE are a few of the readers of THE PRACTICAL TEACHER who know absolutely nothing about cycling and cycles—who cannot tell a hub from a handle-bar. This little article will not interest them; it is beyond them. There is another class of readers who can talk of cycles as authoritatively as a manufacturer's catalogue, and who know every road in the kingdom from John o' Groat's to Land's End. This little article will not interest them; they are beyond it. But between these extremes there is a great body of readers who derive a vast amount of enjoyment from the exercise their bicycle affords, and from the pleasure of seeing the parts of the country it takes them into. To such, we trust, our few remarks may prove acceptable.

The first question that confronts the intending cycling tourist is, "Shall we arrange to go for a month's tour, or shall we work on the 'centre system'?" Now we should never advise any one to plan a ride to last a month. The most persevering cyclist will find his pleasure cloy if he keeps on pedalling away day after day without a break. "Knickers" are very convenient garments to cycle in, but it is good for a man who has worn them for some time to revive those happy feelings of his boyhood's days when he was "put into trousers." Again, owing to weather, state of roads, and wind, it is practically impossible to arrange for a long tour in advance; and if it were possible, our island is so small that we must take care lest in riding straight on we should "run overboard," as an American wheelman once said. We should recommend the tourist to be content with a four or five days' run, which he can repeat after a day or two's rest; and he can arrange the run so as to bring him back to the starting-point, or to a distant place in which he will take his rest. The matter of luggage is a very important factor in determining the arrangements for a tour. Enough can be carried on the cycle to last for four or five days, though even then it is advisable to make use of the parcel post to send on such things as change of hose and handkerchiefs to some address which will be reached about the middle of the time. If the tourist intends to take his "rests" away from home, a bag or box can be sent from place to place by train. The tourist should take care to reduce to the lowest possible limit the luggage to be carried on the machine; some experienced tourists recommend that even the customary mackintosh cape should be dispensed with, and that the rider should take shelter in case of rain. The waterproof, however, is not very heavy or bulky; and it may prove very useful, for there are times when the wished-for shelter takes a long time to reach.

The tourist is reminded that it is not good for man to be alone, and that much of the enjoyment of a cycling tour depends upon its being taken in good company. At the same time, it is not advisable to form too large a party. As, manufacturers of components tell us, "the strength of a chain is determined by its weakest link," so the pace of the party is regulated by the slowest rider, and the length of the day's run by the one who is most easily fatigued. It is of prime importance that the members of the party should not be riders of widely different powers. Fast riders are apt to feel irritated at being held back by friends who go at less than half their own normal speed, and hill-climbers are not pleased at having to walk up what they call "a gentle little slope." Another point in which the disadvantage of a large party is shown is the delay caused to all by a mishap to one. If twelve cyclists make up four equal parties, then arithmetic proves to us that a puncture would cause delay to but three riders; but if all were together in one party, then the number delayed would be increased to twelve. Some members of the party may no doubt be glad of the rest while the patch is being put on, so that such a delay is not always an unmixed evil, but we just desire to mention it among the things to be taken into account in arranging the party.

It is not advisable to start for a tour on a new machine. Old friends are the best; and if the tourist has indulged in a new machine for the summer holidays, it is advisable to go out for a few short spins before attempting the tour. This will enable him to get used to the machine; for any slight change in a machine may be sufficient to prevent the rider from running it to its highest efficiency with his old style of working. Besides this, the nuts of a new machine need very careful watching. During the first week every nut should be tried before mounting the machine; after that they will be found so well set that there is very little likelihood of their working off. For touring purposes, particularly in hilly country, rather a low gear is recommended. When coasting, it is rather more difficult to regain the pedals with a low gear than with a high one, but when once caught, the machine is more quickly pulled up.

One advantage of travelling in company is that one tool-bag and one inflater will suffice for the party. The tool-bag should contain a screw-wrench which can be adjusted to fit any nut on any of the machines, thus saving a great weight which would have to be carried if each machine had its own set of spanners. One repairing outfit should suffice, and so should one oil-can. As a rule, cyclists use too much oil. An excess of oil does not make the machine work any more smoothly, and generally works out through the bearings and collects dust. Should more oil be required, the can may be refilled for a penny.

The map and guide-book should also be regarded as the common property of the party. The importance of having good maps cannot be overestimated. Several maps are now published for the special use of cyclists, and among these the best we have seen are Messrs. Philip and Son's "District Maps." No London cyclist should be without the four maps, which among them cover the district within about 100 miles of London. Another capital map is the "Safety" Cycling Map of England and Wales, published by Messrs. Gall and

Inglis. This distinguishes the roads as "superior," "good," "hilly or inferior," and "bad" roads, and marks no less than 1,700 dangerous hills; and we think that if the cyclist exercises due caution over those, he may chance the rest. The same house publishes also the "*Contour*" *Road Book of England*, in three parts. This is a marvellous example of what an amount of information can be packed into a small space. The roads described number 1,000, and not only is there an account of the surface and hills, but the exact gradients are given, the places from which distances are measured by milestones, with point-to-point measurements, and a list of principal objects of interest and an indication of places where hotels and inns are to be found. The name of the book is derived from the sectional diagrams, which give a very vivid idea of the elevation of the country over which each road passes. The "*Royal*" *Road Book* is on the same plan, but deals only with 248 roads. Of a very different kind are the Touring Guides of Messrs. Philip and Son. Here the number of statistics of heights and distances is very small, but the writer sets out in an interesting manner a description of the country itself, and how to enjoy it. We should advise our readers to take both; they are well worth the low price asked.

Philip's new large scale map of the environs of London is also a beautiful production. To pedestrians and cyclists it is simply invaluable. It is prepared on the scale of one inch to the mile, is well printed (coloured roads) on linen, and made to fold for the breast pocket. It is remarkably clear and accurate.

As the days are long, we should recommend our friends not to ride after dark, and thus save themselves the trouble of carrying a lantern. In that case it will be necessary to make sure of accommodation before lighting-up time; but there is nothing like starting early in the morning, resting in the heat of the day, and then riding till sunset.

To those who are touring for the first time we would give a word of caution against attempting too much. Excessive fatigue takes off from the physical as well as the mental benefit derived from exercise. It is a good plan, even for fast riders, to take the first three miles each day at a slow rate, and in riding through a town or village the pace should always be lowered. Some cyclists recommend a "uniform pace," we would rather recommend a "uniform rate of working," as the best means of making a long run. The two are not the same; with a uniform rate of work, ascents are taken more slowly and descents more quickly than level roads. The best way of managing a long, steady rise is to take it gently. A long rise that cannot be ridden fairly easily should be walked. For a short, sharp rise a spurt may be put on at the bottom, and the speed allowed to fall off near the top. Riders ignorant of mechanics are apt to neglect the last part of this advice. They know that if they get a good momentum into the machine it will "help them up the hill;" but they forget that they cannot "eat their cake and have it too," and that if the momentum is to help them up the hill, they cannot expect to have it at the top. Moreover, they do not require it, for very commonly the descent begins as soon as the ascent ends, and it is a bad plan to start a descent at a high speed.

In conclusion, we advise strict attention to "danger" boards. There is no danger so long as the rider keeps complete control over his machine; when he feels that he cannot do this, he should at once dismount.

ON HOLIDAY READING.

A SHADY lawn in the west country, within sight and sound of the sea, and "far from noise and smoke of town;" a box, or boxes, of good cigars; and a box of good books—these were to a very dear friend of ours (now, alas! gone to his great rest) the three essential elements of a truly enjoyable and fruitful holiday. It may, perhaps, sound the ideal of a lazy man, but our friend was by no means inactive; in fact, few men could be said to have been more "live" than he. Working hard during the other ten or eleven months of the year, as every busy London parson has to do, he used to say that a man who was giving himself out the greater part of his time was bound to spend his holidays taking in, or, as John Bright put it, "stoking:" only a machine can rest idle, and even that runs the risk of rusting.

Now, in spite of Codes, Boards of Education, and other Boards with rules and regulations to meet every contingency except just those which arise, a teacher is not a machine, and should not, therefore, rest like one. He must not abandon himself to the subtle charms of pipe and gossip, nor even to *Dagonet*, but must spend at least a portion of his time stoking. From our own experience, we fear that he will find the bunkers of the average inn or lodging-house inadequate, unless indeed his tastes and needs lie in the direction of a somewhat stern theology: the books therein contained, whose leaves were turned by the hands of an older generation, and have probably been rarely turned since, are usually such as sort well with the old German prints adorning the walls. We ourselves remember some years ago, not caring to spend "half God's good Sabbath" within the four walls of the church, making amends for our laxity by reading out of doors the discourse of an ancient divine on "The Government of the Thoughts"—more edifying, if less graphic, than the alternative treatise on "The Great Assize."

Still, though the mural decorations are beyond the visitor's control, notwithstanding the issue of the hundred best pictures, it is quite possible for him to carry his own literature. Everything conspires to make this a simple undertaking: the enterprise of the publishers has been met by a corresponding demand on the part of the public, with the result that a whole library, ranging from the deepest philosophy to "our wildest works of fiction," can be packed into a very small compass. Of course every one will consider his own tastes in the choice of this portable library, but a few hints, even though they be from one who always takes more books for a holiday than he ever gives an airing, may not be out of place.

First, then, comes the local literature: no corner of the kingdom is now without its literary exponent—either novelist, poet, or writer of glorified guide-books, such as the Highways and Byways series issued by Macmillan; or else it possesses the shrine of some old-time literary light; and he who would really know where he has been must perforce dip into this local lore. *Lorna Doone* needs no introduction, but it may be useful to remind those going to the west that her story may now be had in a volume no larger or heavier than an average prayer-book. (Do not let us be misunderstood: in spite of our earlier confession, this is not to say that she is to take the place of that book.) Other novels appealing to visitors to the same counties are those of Eden Phillpotts and Baring Gould. Perhaps the strongest of the former's works is *Lying Prophets*, though its subject is not of the pleasantest. Of the other writer, it may be said that he has been almost too prolific to produce a classic such as *Lorna Doone* or *Micah Clarke*—such gems as these come not in a hurry. For those who go to sojourn awhile among the lake dwellers or with the Manxmen there are the books of Hall Caine, some of which, we believe, are now sold for 6d.

But a keener joy awaits the man who puts in his bag the *Letters of T. E. Brown*, published by Constable last year. There is always an indescribable charm about the familiar letters of a travelled and well-read man, if he has the true gift; though it is sometimes said that letter-writing is a lost art—that the rush and hurry of the times, and the ease with which friends may now come at one another, have cast it into desuetude. But art or nature, here it is; and we may be thankful for it. The wanderer in the by-paths of history will find much to amuse him in the *Memoirs of the Verney Family*, a collection of seventeenth-century letters, which, unlike the usual lives and letters, contain the answers. Another recent book which has much of the charm of the epistolary style is Professor Beeching's *Conferences on Books and Men*.

To return to the small books, attention may be drawn to the well-known Temple Classics of Messrs. Dent, a perfect treasury of things new and old; the Little Library of

Messrs. Methuen; the New Century Library of Messrs. Nelson; and yet another series, the World's Classics, just being issued by Mr. Grant Richards. These, together with the 6d. editions of recent standard novels, such as George Meredith's and others, and the pocket edition of George Eliot, should surely furnish all we ought to ask in this kind.

Nature-lovers have their own literature: old Gilbert White and Richard Jefferies have found not unworthy successors in the author of *By Leafy Ways* and Mr. Edward Step.

Mention should also be made of those remarkably bright and delightful books of travel written by the late G. W. Steevens, the special correspondent to the London *Daily Mail*. They are now being published in a uniform edition by Messrs. William Blackwood and Sons of Edinburgh and London, and are obtainable through the regular booksellers, libraries, etc. The most recent volume issued, entitled *Glimpses of Three Nations*, is brimful of interest, bright, and thoroughly enjoyable. London, Paris, and Berlin are humorously and cleverly sketched in a series of extremely entertaining chapters. Other books by the same author in this edition are—*With Kitchener to Khartum*, *In India*, *The Land of the Dollar*, *With the Conquering Turk*, *Egypt in* 1898, and the memorial edition, *From Capetown to Ladysmith*, edited by the author's friend Mr. Vernon Blackburn. They are books to buy and to keep.

Messrs. G. Newnes have also issued three new books which are well worth a careful perusal during the holiday months—namely, *The Story of Art in the British Isles*; *French Life in Town and Country*, by Hannah Lynch; *German Life in Town and Country*, by W. H. Dawson. The first is one of the most recently issued volumes of the "Shilling Library of Useful Stories," and is written by J. Ernest Phythian, Extension Lecturer in Art at Oxford and Victoria Universities. It is addressed to those who, having made little or no study of art and its history, may be glad to know, not with any idea of practising art, or even of devoting much time to its study, the part it has played in the history of their country, and to form, as part of the equipment of a good citizen, some estimate of the place it ought to take in any civilisation worthy the name. To arouse an interest in art generally, and in our own art in particular, is the aim of the book. The thirteen chapters, beginning with pre-historic art, and leading on to the art of the nineteenth century, are pleasantly written, and brightened by the inclusion of a number of well-printed illustrations and diagrams. There is also a useful list of books for those who might wish to pursue the subject further.

The other two volumes belong to an entirely new series of handbooks descriptive of the home and social life of Continental peoples. The aim of the series, entitled "Our Neighbours," is to describe in a friendly spirit such phases of life as are peculiar to each country—that is, they deal with the intellectual life of various peoples, their social divisions and distinctions, their manners and customs, wealth and poverty, armies and systems of national defence, their industrial, religious, and home life, amusements, etc. Both books have been written by well-informed and experienced authors, who have travelled and lived in the countries of which they respectively treat. Miss Lynch's volume is a wonderful interpretation of French life in Paris and out of Paris. Town and provincial life she knows well, and one longs to visit the country and intermingle with the people of provincial France after having indulged in the sparkling narrative of Miss Lynch's chapters, which afford entertainment, amusement, and much that is worth reading again and again. Mr. Dawson's volume on Germany is equally interesting, and, like Miss Lynch, he has much to tell that is worth telling. If these volumes are samples of others to follow, one may safely predict a wide sale for the series. They teem with good things, and furnish remarkable pictures of European life. Both books contain many beautifully printed illustrations, one of which, by the kindness of Messrs. Newnes, we are able to insert.

OLD NUREMBERG. (*From "German Life in Town and Country"—G. Newnes.*)

But now, lest we should be charged with having wandered too far from our text, that holiday reading should serve for edification as well as for delight, let us commend to the reader two real books—one of which has been, ever since our first acquaintance with it, a hardy annual, and the other of which promises to become so. The first is Ruskin's *Lectures on Art* (1870), and the second *William Watson's Collected Poems*. A holiday in which either of these two is made part of the mental stock-in-trade will not, so far, have been spent in vain.

We append a list of a number of books from which a selection for holiday reading may be made.

1. Books to buy for the Holidays.

The New Century Library—Thackeray, Dickens, and Scott.
Temple Classics, volumes to taste.
The Little Library, volumes to taste.
Glimpses of Three Nations, *Steevens*.
Diana of the Crossways, *Meredith*.
Rhoda Fleming, *Meredith*.
Trilby, *Du Maurier*.

Far from the Madding Crowd, *Hardy.*
John Inglesant, *Shorthouse.*
The Orange Girl, *Besant.*
In the Days of Auld Lang Syne, *Ian Maclaren.*
Beside the Bonnie Brier Bush, *Ian Maclaren.*
Children of the Ghetto, *Zangwill.*
Verses and Translations, *C. S. Calverley.*
A Fleet in Being, *Kipling.*
Lectures on Art, *Ruskin.*
William Watson's Collected Poems.
The Day of the Sun, *Conrad Noel.*

2. Books to beg or borrow.

Letters of Thomas Edward Brown.
Memoirs of the Verney Family.
John Morley's "Cromwell."
Conferences on Books and Men.
How Sailors Fight, *John Blake.*
Romance of Wild Flowers, *E. Step.*
By Vocal Woods and Waters, *E. Step.*
Fierceheart the Soldier, *J. C. Snaith.*
The White Cottage, *Zack.*
I'd Crowns Resign, *J. M. Cobban.*
Jack Raymond, *Mrs. Voynich.*
The Good Red Earth, *Eden Phillpotts.*
Augustine Birrell's Collected Essays.
Virginibus Puerisque, *Stevenson.*
The Life of the Bee, *M. Maeterlinck.*
Richard Carvel, *Winston Churchill.*
The Dolly Dialogues, *Anthony Hope.*
Essays of Elia.
Northborough Cross, *L. Cope Cornford.*
Men and Matters, *Herbert Paul.*
Penelope's Irish Experiences, *Mrs. K. D. Wiggin.*
Domesticities, *E. V. Lucas.*

"COME OVER AND HELP US."

NOTES ON COUNTRY HOLIDAYS FOR POOR CHILDREN.

HOLIDAYS, holidays! What pleasant memories of shining strand and pebbly beach, of purling stream and sequestered grove, of wild mountain and fragrant moor! How infectious is the gaiety and excitement of the juvenile members of one's family enjoying to the full the pleasures of anticipation! The departure platforms at the railway stations teem with irrepressible little manumitted slaves of the slate and the book off for the annual Saturnalia, and at the sight "most potent, grave, and reverend signiors" take heart of grace, and in the happy smiles and ceaseless chatter renew their youth again. The trains steam out, the windows framing a galaxy of happy, expectant faces; but what of the poor children left behind? How many there are to whom holidays prove rather a curse than a blessing! The dragging days are marked by almost ceaseless toil for the boys in the endeavour to add to the family's attenuated exchequer, and one dull, wearying round of baby nursing or other domestic duties for the girls; and even where no such restrictions are imposed, the courts and slums and sordid streets of our large towns afford but poor facilities for wholesome recreation during the time the schools are closed.

Happily the claims of unfortunate children do not go altogether unheeded, for there are many agencies at work to provide holidays for the sick and needy, and many on whom untoward circumstances lie most heavily. It will not be possible to more than outline a few prominent schemes; and if a simple record of what is already being done in the interests of the children lead to other districts taking up the good work, the aim of this present article will be attained.

London.

The Annual Report of the Children's Country Holidays Fund is an interesting little volume of 112 pages. Her Majesty Queen Alexandra is patroness; the Earl of Errol and Lord Avebury are the trustees; the Archbishop of Canterbury, the Bishop of London, Cardinal Vaughan, and other notabilities are among the vice-presidents; and there is a strong council working under the chairmanship of the Rev. Canon Barnett, with the Hon. Alfred Lyttelton, K.C., M.P., as treasurer, and Mr. Charles F. G. Masterman, secretary. Last year 31,730 children were sent into the country for a fortnight each, at a cost of over £22,000, or an average of little more than fourteen shillings per head. The children were drawn from nearly seven hundred schools, and were domiciled in over a thousand different centres. The south-eastern counties figure very largely in the list of registered homes, but the difficulty of finding suitable homes for so many children is so great that they are sent as far afield as Devonshire, Monmouth, Derby, and Lincoln.

The London school district is mapped out into local centres, each worked by a separate sub-committee, which makes all arrangements concerning the selection and dispatch of the little holiday-makers from its own district. At the other end of the journey is the country committee, which takes charge of the children during their stay, and secures their safe dispatch home again. The crux of the whole scheme is the financial aspect. The general public contributed last year over £14,000, and the parents' contributions reached half the amount. The local visitors take each application on its merits in deciding the amount the parents shall contribute; sometimes it is seven or eight shillings, and in other cases as low as two or three shillings.

Well-organised subdivision of labour enables the large number of children to be dispatched to all points of the compass without a single hitch. Fifteen thousand children were conveyed by rail to their thousand centres in one day, and what human machinery was involved in the successful transportation only those engaged in the work can fully realise.

Manchester.

The committee of the Manchester and Salford Children's Holiday Fund sent 525 girls and 262 boys for a three weeks' holiday to six centres only. The total cost was over £600, towards which parents' contributions amounted to £138.

Liverpool.

In 1900, over 2,000 children were sent to centres extending from Cumberland to Salop. The expenses were met by subscriptions, £1,285, and parents' payments, £786.

Sheffield.

The Children's Holiday Association in this town is particularly fortunate in enlisting the sympathy and interest of His Grace the Duke of Norfolk. At Kirk Edge, on the borders of the Yorkshire moors, his lordship possesses a disused orphanage, which he places at the disposal of the committee. Here, for six consecutive weeks during the summer, batches of sixty children are entertained for a week. The grounds are admirably adapted for the purpose, and there is no scheme that ensures so much pleasure and benefit to the children with so little harassing routine for the workers. Various members of the committee reside in turn at the orphanage to generally superintend, but the annual report states that "no one is more deserving of the committee's thanks than our excellent cook, Mrs. Micklethwaite, who is undoubtedly the 'mainspring' of affairs at Kirk Edge." The average cost is under seven shillings per head, including transit, food, entertainments, etc. Mr. Alexander Taylor, the very genial secretary of the movement, remarks: "One shilling per head per day is not very extravagant, and the poor little souls do so enjoy themselves."

Wolverhampton.

The Wolverhampton scheme is unlike any other of which we know, in that the total expenses, since the initiation several years ago, have been borne by two local gentlemen who have each contributed £50 per annum. Death has recently removed one of these benefactors, and unless some philanthropist steps into the breach, the useful work among Wolverhampton children will be decreased by half. The children are conveyed by road to Cannock Chase, a distance of twelve or fourteen miles, where homes for ninety children are easily secured at Pye Green, from which the beautiful heathery Chase extends for miles. Each child stays one

week, and, as in Sheffield, is not expected to bear any part of the expenses.

Rules and Instructions.

Teachers and others desirous of initiating a scheme for children's holidays will find valuable suggestions in the following rules and instructions, many of which are quoted from those very kindly placed at our disposal by Miss A. E. Sampson, secretary of the Liverpool Children's Country Holiday Fund. All successful schemes, however, work on very similar lines, and their rules and regulations are very much alike.

1. *Selection of Children.*—Prefer ailing children, those who have not been sent out into the country previously, and those who have no relations in the country. Children of deserving widows should receive special consideration.

2. *Parents' Payments.*—It is expected that they will contribute according to their means. Small weekly payments begun early in the year are recommended. In some towns the payments are made in connection with the school savings-banks.

3. *Preparation.*—Insist upon cleanliness of person and clothing. A change of underclothing is indispensable if the holiday is for longer than a week.

4. *Journey.*—All children going away or returning by rail should be accompanied to the station. Each child must be labelled with its name, town address, and destination. If there is no official escort, the kindly offices of the guard of the train should be secured.

5. *Infection.*—No child must be selected who has recently been exposed to infectious disease. It is generally found an easy matter to interest the medical profession in children's holiday schemes; and if the children are paraded on the morning of departure, a doctor will speedily discover any unsuitable candidate.

6. *Country Homes.*—Five shillings a week is paid for each child for board, lodging, and necessary washing. In the sleeping accommodation there must be no overcrowding. Town boys and girls should be lodged in different houses, and no children should be domiciled where other lodgers are taken.

Children unclean in person and clothing, or of vicious habits or character, should be returned by the worker in charge; cases of this kind are likely to create a difficulty in securing nice homes in future years.

Town workers will always find the country clergy and teachers invaluable allies in securing suitable homes for the children.

Light and Shade.

The children's letters and essays, and the reports of the workers, afford us much that is interesting, and a great deal more that is downright pathetic.

"The sky was bluer there than here," writes a Whitechapel child very simply; and the significant comparison of another provides food for reflection—"There are no public-houses like in London."

The country mothers sometimes become quite attached to their little town visitors, and it is not unusual for a particularly delicate child to be kept weeks over the stipulated time free of charge. Nor is the feeling unreciprocated. Wolverhampton boys and even girls walk the fourteen miles to Pye Green and back again in order to visit the foster-mother whose kindness and bounteous table had made so lasting an impression on their memories.

The country people frequently ask for the same children again. One cottager particularly desired to receive one small boy, giving as his reason that the youngster could "climb a spout" better than he had ever thought to be possible, while for turning a succession of cart-wheels he was "just a marvel." On the other hand, one little East Ender positively refused to visit the country again, because "*last time there was an earwig in the bed.*"

One correspondent reported with pride that they were on the highroad of solving the difficulty of the dearth of agricultural labourers, as one of the boys had engaged himself as a farm-boy in the country village to which he had been sent. In due course, however, he confessed with shame that not only had he become an errand-boy in Battersea, but his yarns of London life had induced a country chum to include himself among the workers in London.

Cricket, football, races, walks, story-telling, and a hundred and one other methods of entertainment fill the happy hours. The children at one centre attended the village annual *fête*, entered for all the events, and *carried off all the prizes.*

A committee known to us was once confronted with an unforeseen difficulty. A boy's cap was thrown over a hedge, in which, after duly reconnoitring, he found a hole big enough to allow the passage of his diminutive body. On his return to his companions he announced, in language "understanded" of them, "There ai' 'alf some big gooseberries over there." That evening an irate cottager waited upon the teacher in charge, to indignantly inquire what had become of the gooseberries with which he had intended taking the first, second, and third prizes at the local "flower show next week." The prizes were perhaps no certainty, but in that the recompense was an assured fact the cottager had reason to be well satisfied.

The selection of children very often falls to the lot of the teacher, and few there are better able to correctly assess the circumstances of a family. In many cases it is necessary to visit the homes. Let us look into a few houses when a Liverpool town visitor is calling on a Saturday afternoon for the weekly contributions. The first house is a very poor one. Janie's mother is a widow living in an all-sorts cellar shop. The light of day scarce enters the tiny living-room beyond. Little wonder indeed that Janie is pale! Her school teacher is paying for her, and the mother will repay it by doing sewing for her.

Another woman hopes the visit to the country will stave off St. Vitus's dance, with which her boy is threatened. She earns what she can by "finishing" boys' suits at 10d. a dozen. It is *finishing* in more than one sense, for there are seven buttons to sew on each suit, buttonholes to make, pockets to put in, and sleeves to complete. Yet the thin face lights up when she pays the last few coppers to complete the 4s. 6d. agreed upon.

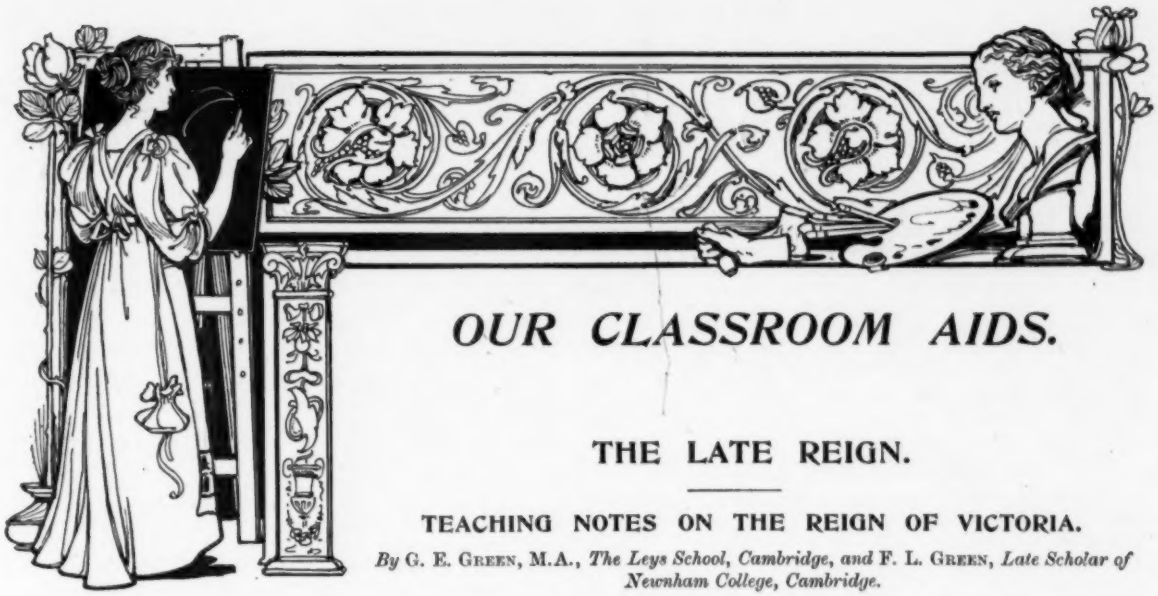
"Now a doubtful case. Maggie's mother is out, a shrill-voiced elder sister informs us (we suspect she has not gone far), 'but she doesn't think as she'll let her go; it is too much to pay, 4s. 6d.' There are jugs and glasses on the table. The house is very dirty. Maggie is wistful and pale, but what can be done? Very reluctantly and sorrowfully the visitor strikes Maggie's name off the list. 'If they had made one effort,' she says regretfully. The mother has known for three months that Maggie might go; if she had denied herself one jug of beer a week, she could have sent her. There is plenty of money coming in, but the father and mother both drink; it is not right to give them an advantage at the expense of the striving and industrious. But Maggie's face goes to one's heart, and justice seems a difficult virtue."

At the next house the mother opens the door with a baby in her arms. Including the twins, who arrived two months ago, there are seven children in the house, and the eldest is not yet eight years. Emily is nearly seven; she has had a "swelled neck;" the change will do her good, and "we'll be real glad to pay 5s.," says her mother gratefully.

These are not isolated cases; there are thousands of such in our great cities—everywhere, in fact, where misfortune, poverty, and drink claim people for their own. Whatever the circumstances may be, the children are not to blame, and the cry of the hapless little ones for ever rings out, "Come over and help us." The needs of the children are great; the helpers are comparatively few. Many teachers are already rendering noble service in the cause, but there is room for all.

AMBLESIDE.

THIS old-established Summer Course in Drawing and Manual Training, to be held from July 29 to August 24, has been termed, not inaptly, the Nääs of England. Unlike the Nääs course, however, which confines itself to wood sloyd, the Ambleside course includes all branches of educational handwork, from the Kindergarten of the infant school to the highest branches of Manual Work. Mr. J. Vaughan, so well known to the readers of *The Practical Teacher's Art Monthly*, is the efficient director, and students who contemplate studying any of these modern developments in education cannot do better than journey to Ambleside. We understand that the opening address will be given by T. G. Rooper, Esq., H.M.I. Further particulars may be obtained upon application to the secretary, Mr. H. Way, 111 Ramsden Road, Balham, S.W.



OUR CLASSROOM AIDS.

THE LATE REIGN.

TEACHING NOTES ON THE REIGN OF VICTORIA.

By G. E. GREEN, M.A., *The Leys School, Cambridge, and* F. L. GREEN, *Late Scholar of Newnham College, Cambridge.*

IV.—FOREIGN RELATIONS—(*Continued*).

VI. ENGLAND AND SPAIN.

IN 1848 there was a temporary rupture of diplomatic relations with Spain. In 1898 England was neutral in the war in Cuba, waged between Spain and the United States.

VII. ENGLAND AND PORTUGAL.

In 1889 Portuguese officials seized the Delagoa Bay Railway, and Major Serpa Pinto took possession of British territory on the Shiré River and in Mashonaland. Lord Salisbury sent an ultimatum to Portugal, and an agreement as to South African possessions was made with Portugal in 1891.

VIII. ENGLAND AND BELGIUM.

1. Proposed Annexation of Belgium by France.—Bismarck in 1870 published a treaty for the annexation of Belgium by France, which, he alleged, was suggested to him by Napoleon the Third, but which the French disowned. This alienated English sympathy from France.

2. International Monetary Conference at Brussels, 1892.—This Conference, for a decimal coinage throughout Europe, was rendered abortive by the action of Great Britain and Germany. A British trader, Stokes, was hanged in 1895 by Major Lothaire, a Belgian officer of the Congo State, and the Belgian Government was forced to pay an indemnity of 150,000 francs.

IX. ENGLAND AND GREECE.

In 1863 the Greek crown was offered to Prince Alfred of England, and refused. The Ionian Islands under our protection were ceded to Greece. In 1870 Lord Muncaster was captured and held to ransom by Greek brigands. The Greek movement for independence caused the Great Powers to blockade that country in 1896. In 1897 a Greek expedition, under Colonel Vassos, established itself in Crete, and war, in which the Turks were successful, broke out between Greece and Turkey. England was neutral, but showed some sympathy with Greece.

X. ENGLAND AND DENMARK.

The London Conference of 1864, summoned to bring about peace between Prussia and Austria on the one hand and Denmark on the other, failed in its object. England refused to intervene in the Schleswig-Holstein dispute of 1866, which cost Denmark two provinces. King Edward the Seventh married, in 1863, Princess Alexandra of Denmark; and his daughter, the Princess Maud, married, in 1896, Prince Charles of Denmark.

XI. ENGLAND AND EGYPT.

1. The Dual Control.—In 1875 Lord Beaconsfield bought the shares owned by the Khedive Ismail, and thus became interested in the good government of Egypt. From 1879 to 1883 France and Britain exercised joint control over the country. Its finances were ruined, and the two powers intervened to protect the interests of those of their subjects who had lent money to the Egyptian Government. In 1882 Arabi Pasha led a revolt against the British. Alexandria was bombarded, and Arabi was defeated by Lord Wolseley at the battle of Tel-el-Kebir.

2. Egypt and the Soudan.—In 1883 the Soudan—the upper regions of the Nile—had passed into the hands of an Arab religious adventurer, the Mahdi, who roused his followers to revolt against Egypt. In November 1883 the Mahdi defeated and entirely destroyed a mixed force of British and Egyptian troops under Hicks Pasha. Britain then advised the Khedive Tewfik to abandon the Soudan. General Gordon was intrusted with the bringing away of the garrisons of Khartoum and other places. He sent 2,500 men down the Nile, but was besieged by the Mahdi in Khartoum. The town fell into the Mahdi's hands, and the murder of Gordon led to the abandonment of the British policy for a time. The British troops withdrew to Wady Halfa, which became the southern frontier of Egypt.

In 1896 the reconquest of the Soudan was begun. In 1897, after some severe fighting with the Dervishes, Sir Herbert (now Lord) Kitchener, at the head of British and Egyptian troops, pushed on to Berber. Early in 1898 the Madhi's army was completely defeated at the battle of the Atbara; and a few months later, at Omdurman, Sir Herbert Kitchener finally shattered the Dervish power in the Soudan by defeating the Khalifa, the Mahdi's successor. An Anglo-Egyptian army took possession of Khartoum.

3. Egypt and Syria.—(1.) In 1840 the Treaty of London was made between Russia, Austria, Prussia, Great Britain, and Turkey for the expulsion of the Egyptians from Syria. In consequence of this treaty the allied fleets took Sidon and Acre. (2.) England and the other Great Powers interfered in Syria in 1860, owing to the massacre of Christians by the Druses.

XII. ENGLAND AND RUSSIA.

1. Russia and Afghanistan.—Russia intrigued with the Ameer in 1837. The first Afghan War followed.

2. The Crimean War.—England entered into the Crimean War because her interests in India were threatened. The Czar Nicholas fruitlessly sought for an understanding with England as to the division of the Ottoman territories. In

1844 he had given assurances that he would maintain the integrity of the Turkish Empire.

3. **War of 1877.**—The British Government objected to the bases of the peace between Russia and Turkey in 1878, and the British fleet was ordered to proceed to Constantinople. England forced on Russia the Congress of Berlin.

4. **Russia and China.**—In 1891 Russia attempted to annex the Chinese Pamirs. Revolts in China followed, and a massacre of Christians. In 1898 Russia obtained from China the lease of Port Arthur and Talienwan. The next year England made an agreement with Russia, soon explained away by the Czar, as to spheres of influence in China. Russia, with the other Great Powers, interfered in the Chinese War of 1900.

5. **Alliances.**—In 1874, the Duke of Edinburgh, the second son of the Queen, married Marie of Russia, daughter of Alexander the Second. The Queen's granddaughter, the Princess Alix of Hesse, married the Czar Nicholas the Second in 1894.

XIII. ENGLAND AND AMERICA.

1. **The Civil War in America, 1861–1865.**—England was very nearly involved in the American Civil War. The two causes of the war were—(1) Northern protective duties in the supposed interest of their manufactures, which pressed heavily on the Southern planters; (2) the determination of the North that slavery should not be extended to the Western States. When Abraham Lincoln, in 1860, was elected President of the United States, eleven Southern States separated from the Union, and called themselves the Confederate States. In 1861 the Confederate Government sent two agents, Mason and Slidell, to Europe in a British mail steamer, the *Trent*, to seek the friendship of England and France. A Northern man-of-war took them prisoners, though they were under the British flag, and war between England and the Northern States was only averted by the surrender to England of Mason and Slidell. The war ended in 1865, in the complete triumph of the Northern States, the abolition of slavery, and the reconstitution of the Union.

2. **The "Alabama."**—At the beginning of the War of Secession the Northern fleet blockaded the Southern ports, and the supply of cotton from America almost ceased. The Confederates had great difficulty in obtaining manufactured goods and materials of war. English merchants then fitted out fast trading steamers to run the blockade and carry on trade as usual. We then infringed international law through the action of the *Alabama*. She was a swift warship, built at Birkenhead for the Southerners. For two years she preyed on Northern commerce, using the British flag as a decoy, and taking seventy merchant ships. Finally she was destroyed by a Northern ship of war, the *Kearsarge*, and the Americans demanded damages from England. In 1872 the matter was submitted to the decision of a court of arbitration at Geneva, consisting of five umpires, appointed by the Queen, the President of the United States, the King of Italy, the President of the Swiss Republic, and the Emperor of Brazil. Britain had then to pay three millions sterling as damages.

3. **United States and Venezuela.**—In 1895 the Venezuelans committed an outrage on British officials on the Guiana frontier, and a British ultimatum was presented to the Venezuelan Government. President Cleveland threatened Britain with war unless the differences with Venezuela were submitted to arbitration. In November 1896 we came to a settlement with the United States about Venezuela, and a General Treaty of Arbitration with the United States was signed.

4. **Miscellaneous.**—(1.) In 1843 the Ashburton Treaty with the United States was signed. It dealt with the questions of the boundary of Canada and the extradition of criminals.

(2.) In 1850 the Clayton Bulwer Treaty, between England and the United States, was signed.

(3.) In 1888 the Fisheries Convention with the United States was signed at Washington, but was rejected by the United States Senate. Mr. Cleveland, for electioneering purposes, lent himself to a political attack on Sir L. Sackville West.

XIV. ENGLAND AND CHINA.

1. **The First Chinese War, 1840–1842.**—A quarrel with China as to the importation of opium by our merchants led to our declaring war in 1840. We forced China, by the Treaty of Nankin, in 1842, to cede us Hong Kong, and throw open Canton and four other ports to British commerce.

2. **The Second Chinese War, 1860–1864.**—This, too, was caused by a dispute about the opium traffic. The Chinese officials seized the *Arrow*. The British forced their way to Tientsin, where a new treaty was made, opening other ports to British commerce. "Chinese Gordon" subdued the rebellion of the Taipings. Pekin was taken by the British and French, and a Convention was signed ratifying the Treaty of Tientsin.

3. **War between China and Japan, 1894–1895.**—The war originated in a quarrel for Korea. Japan forced China to cede Formosa and abandon her claims to Korea. The jealousy of some European powers was roused by the success of Japan. Russia exacted Port Arthur, to obtain an ice-free port for the terminus of her Siberian railway. Germany obtained Talienwan; England, Wei-hai-wei, and virtually the valley of the Yang-tse-kiang, as a market for British manufactures.

4. **The Chinese War of 1900.**—In May 1900 the Emperor of China abdicated, and was succeeded by a boy of fourteen, Po Ching. In June there was an insurrection of Boxers, who besieged Tientsin. It was relieved by England and her allies, who also relieved Peking, and found all the ministers safe except Baron von Ketteler, the German minister, who had been murdered in the streets. In October 1900 the British and German Governments concluded a treaty concerning China.

XV. ENGLAND AND ABYSSINIA.

In 1868, King Theodore, offended at the conduct of the British Consul, seized all the British subjects within his reach. He refused to set them free, and an expedition was sent out under Sir Robert Napier. The Abyssinians retired after the first encounter, and the prisoners were sent into the British camp. Magdala was then stormed, and it was found that Theodore had shot himself.

XVI. ENGLAND AND PERSIA.

1. **First War with Persia, 1838.**—We engaged in a short war with Persia because of an insult to the British Ambassador.

2. **Second War with Persia, 1856.**—The Persians seized Herat. Bushire was taken on December 10. They were forced to withdraw from Herat and respect the independence of Afghanistan.

XVII. ENGLAND AND JAPAN.

In 1862 Japan sent ambassadors to England, but in 1863 the Japanese feudal prince opened fire on a British squadron sent to obtain redress for the murder of travellers. His city was bombarded, and he had to pay an indemnity. In 1894 we made a commercial treaty with Japan.

THE INSPECTOR'S NOTEBOOK.

BY AN INSPECTOR OF SCHOOLS.

The Certificate Examination.

THE most important event for teachers this month is, I suppose, the Certificate Examination. I have received many queries respecting the effect of the changes. The majority are from ex-pupil teachers who think there is a chance of becoming certificated in 1902 without taking the First Year's Examination in 1901. I refer all inquirers to a long note on the subject below.

Every candidate should be careful to read, recite, and teach, as no less than 220 marks are obtainable for these three subjects. It is important in the reading that the candidate should present two books which have been

approved by the inspector and carefully prepared by the examiner. Some teachers do not trouble to offer any definite book to read from. They cannot, of course, receive such high marks as those who fully observe the regulations.

Schedule III., Code 1901. The attention of my readers is directed to the new requirements under the head of Physical Training. It will necessitate the alteration of many time tables. Article 3 runs: "The course in physical training should be carried on continuously throughout the school year for not less than one hour in each week for each class, and for not more than one half-hour for each class on any one day. The instruction should not occupy any part of the time given to 'recreation'" (Article 12*e*).

In many schools physical training has been taken in a more or less perfunctory manner in the past; indeed, one has occasionally seen it placed on the time table to alternate with "recreation." Now we get a whole schedule devoted to its consideration, and this shows that it is intended to receive more serious attention in the future.

Physical Training. It will be well to summarise the chief features of this new schedule—

1. Physical training is a compulsory subject.

2. The course should be either the one set forth by the Board of Education, or one having a similar aim and approved by an inspector.

3. One hour a week for each class is the minimum time.

4. The instruction should be given in the open air if possible, or in a room without desks.

5. The movements should be prompt, precise, and vigorous.

6. In the lower classes, the number under one teacher should be small.

7. The regular teaching staff should give the instruction, if possible.

The Punishment Book. Several teachers have consulted me respecting the use of the punishment book. Some enter only severe cases of corporal punishment, others enter every case. It seems to me that all cases of corporal punishment should be entered up. A teacher is taking up an illogical and unsafe position when she decides to enter certain cases and omit others. It is not necessary to have some particular kind of book. An ordinary exercise book will suit the purpose.

As a general rule, it ought never to be necessary to use the cane in infant schools, and very, very rarely in girls' schools. In boys' schools it is probably more necessary to resort occasionally to corporal punishment. The book will in some cases prevent the too frequent use of the cane. To be constantly tapping the children with a cane, I am certain, does not improve the discipline of a school. Familiarity breeds contempt. In many schools this is exemplified by the use of canes as pointers. Irregular forms of punishment should be discouraged. Teachers of high standing are modifying their views with regard to the necessity of corporal punishment. No doubt the freedom from anxiety engendered by the new Code is responsible for this to a large extent. It is becoming more and more general to treat the obviously dull in a more lenient fashion than the requirements of the past would perhaps allow. Many scholars come late to school through the fault of their parents. It is the business of the master to discriminate between such and those who are late through their own fault.

Correspondence.

At the suggestion of the Editor, I am in future devoting more consideration to this portion of my monthly notes. It is thought that the several changes in the Code, and the alterations in the regulations of teachers' examinations, will call for extra correspondence.

I take this opportunity of inviting readers to seek my counsel on any subject coming within the purview of schoolcraft. Please oblige by writing queries in concise language, as I purpose publishing *question* and *answer*, so that all interested may benefit. Any one who needs a reply by post must enclose a stamped addressed envelope, and one stamp in addition.

Queries should be directed to Inspector, care of the Editor. Only those letters reaching me by the 3rd of the month can be answered in the succeeding number of this magazine.

Answers to Correspondents.

B.C.B. is an ex-pupil teacher who has never done any Latin, and desires my advice as to what course of studies to pursue—whether he should prepare for London University Matriculation or for the Certificate Examination.

I don't hesitate to advise him to proceed at once for his certificate. His chances of success at Matriculation are not bright, considering he has done no Latin. If he feels over-energetic after passing the Certificate Examination, he might seek my advice again *re* Matriculation, and I will freely give it.

W.S.M. and others seek information respecting the Certificate Examination. Let me try to clear this matter up for acting teachers. In so doing, I will not increase the confusion by dealing with the Third Year's Examination, which affects only students in training colleges.

"In 1901 there will be the usual First Year's and Second Year's Certificate Examinations.

"In 1902 there will be no First Year's Certificate Examination. Acting teachers desiring to become qualified as Certificated Teachers in 1902 must take the Second Year's Examination, and the conditions of admission will be those laid down in Article 57 (ii) and (iii) of the Code of 1901."

"It should be noted that, except where special exemption has been granted from the First Year's Examination for illness or other cause accepted as satisfactory by the Board, no person can be admitted under Article 57 (ii) (*a*) or (*b*) to the Second Year's Examination in 1902 who has not already passed the First Year's Examination.

"In 1903 the First and Second Year's Certificate Examinations will disappear, and will be replaced by a single examination, the syllabus of which, and the conditions of admission to which, will be published by the Board of Education in due course."

No candidate, therefore, can hope to escape the First Year's Examination in 1901, and also sit for the Second Year's in 1902.

J.G. asks whether it is necessary for her to serve in the same school where she was an ex-pupil teacher in order to obtain the parchment.

It is not necessary, but she must serve as a certificated teacher continuously in one and the same school for not less than eighteen months.

J.T. seeks legal advice as to what notice it is necessary for an assistant teacher to give.

He would be very unwise to leave without giving notice. Moreover, he is unable to prevent the managers from giving him such a notice as shall expire just before the summer vacation begins.

W.F.S. is a certificated teacher who wishes to cease contributing to the Pension Fund.

The Board of Education has ruled that a teacher who has accepted the pension scheme cannot withdraw.

H.S. is a Scotch teacher who wants to know whether the new regulations *re* the Certificate Examination apply to Scotland.

The regulations referred to in this magazine apply to English teachers. I have not heard of any alterations affecting Scotch teachers; but *H.S.* is advised to drop a line to the Secretary, Scotch Education Department, Dover House, Whitehall, London, S.W.

A COURSE OF OBJECT LESSONS FOR GIRLS' SCHOOLS.

BY WILLIAM DONE, B.A.,
Head-Master of Brighton Pupil Teachers' School.

VIII. A CANDLE.

Articles of Illustration.—Tallow candle, several pieces of composite or paraffin candles, a small dish in which to melt some tallow, spirit-lamp or gas-flame, some thick darning cotton or wool, a thin piece of glass tubing, a cylindrical pencil-box sawn in two lengthways, a small piece of wire gauze or stout cardboard.

Experiment and Observation.	Result or Inference.
Show different kinds of candles. Cut a candle in half down the wick. Light the candles, and compare the brightness of the flames.	Candles are made of different materials. They all have a wick, and the flame varies in colour and brightness with the various materials of which the candle is made.

Experiment and Observation.	Result or Inference.
Take a piece of wick and untwist it. Let several girls do the same.	The wick is composed of cotton threads twisted together.
Cut off a thin strip of tallow. Put a lighted match to it.	The tallow does not catch fire.
Melt a little tallow in a dish. Plunge a lighted match in it.	The melted tallow will not catch fire; the match, moreover, is extinguished.
Dip one end of a piece of twisted cotton or clean wick in ink. Let several of the girls do the same.	The ink creeps up the cotton thread for some distance above the point at which it was placed in the ink.
Proceed similarly with melted tallow.	The melted tallow creeps up the threads in a similar manner. [Teacher may give the term—*capillary attraction.*]
Refer to the three states in which matter may exist—solid, liquid, gaseous.	By heating the solid tallow we get it in a liquid form; by further heating we should probably obtain it in a gaseous state.
Let several girls light pieces of candles, noting carefully what goes on under the teacher's direction; who also helps them to reason out the facts of the case.	The lighted wick flickers and almost dies out, but the heat has by this time been sufficient to melt a little well of tallow. Some of this ascends the wick, and the flame revives and burns steadily. The heat probably turned a little of this melted tallow which mounted up the wick into a gas or vapour—tallow-gas—and it was this that burned.
Let the girls examine the structure of the candle flame, making a drawing of the same, while the teacher follows with an enlarged drawing on the blackboard.	Round the bottom of the flame is a blue belt, in the middle is a dark part, and outside this a bright yellow covering.
Lower a piece of wire gauze or a piece of stout cardboard on to the flame. Hold it there for a brief time.	We notice a red ring if the gauze is used, or a scorched ring if the cardboard is used. Evidently the flame is hollow.
Bend a thin piece of glass tubing with an acute angle at one end and a larger angle in the opposite direction at the other end. Pass the former end into the inner dark zone of the candle. Hold a lighted match at the other extremity.	A small flame is seen at the end of the glass tubing. Evidently the dark central part of our candle flame was formed of unburnt candle gas, which travelled along the tubing and was ignited at the other end.
Sum up the parts of a flame, and say that in a succeeding lesson we shall learn more about the nature of these parts.	The three parts of a flame are— 1. Pale blue belt at base. 2. Dark inner portion of unburnt gas. 3. Luminous mantle.
Take the prepared pencil-box, also a full-length wick from a composite candle. Attach the wick so that it stretches vertically down the middle. Place the two halves of the box together so as to form a candle-mould. Pour in steadily the melted material of the composite candle. Set aside to cool.	We have made a composite candle in a mould. [While this is cooling, the teacher might tell the girls how a tallow "dip" is made—by continually dipping a wick in melted tallow and allowing each coat to cool down.]
Light the tallow candle, and also a composite one. After each has burnt a few minutes, compare the appearance of the wicks.	The tallow wick becomes charred at the top, and requires snuffing. The top of the wick of the composite candle bends over slightly, and is consumed as the candle burns away, and so does not require trimming.
Take the candle from the mould. Light it.	It burns like an ordinary candle.

IX. VENTILATION.

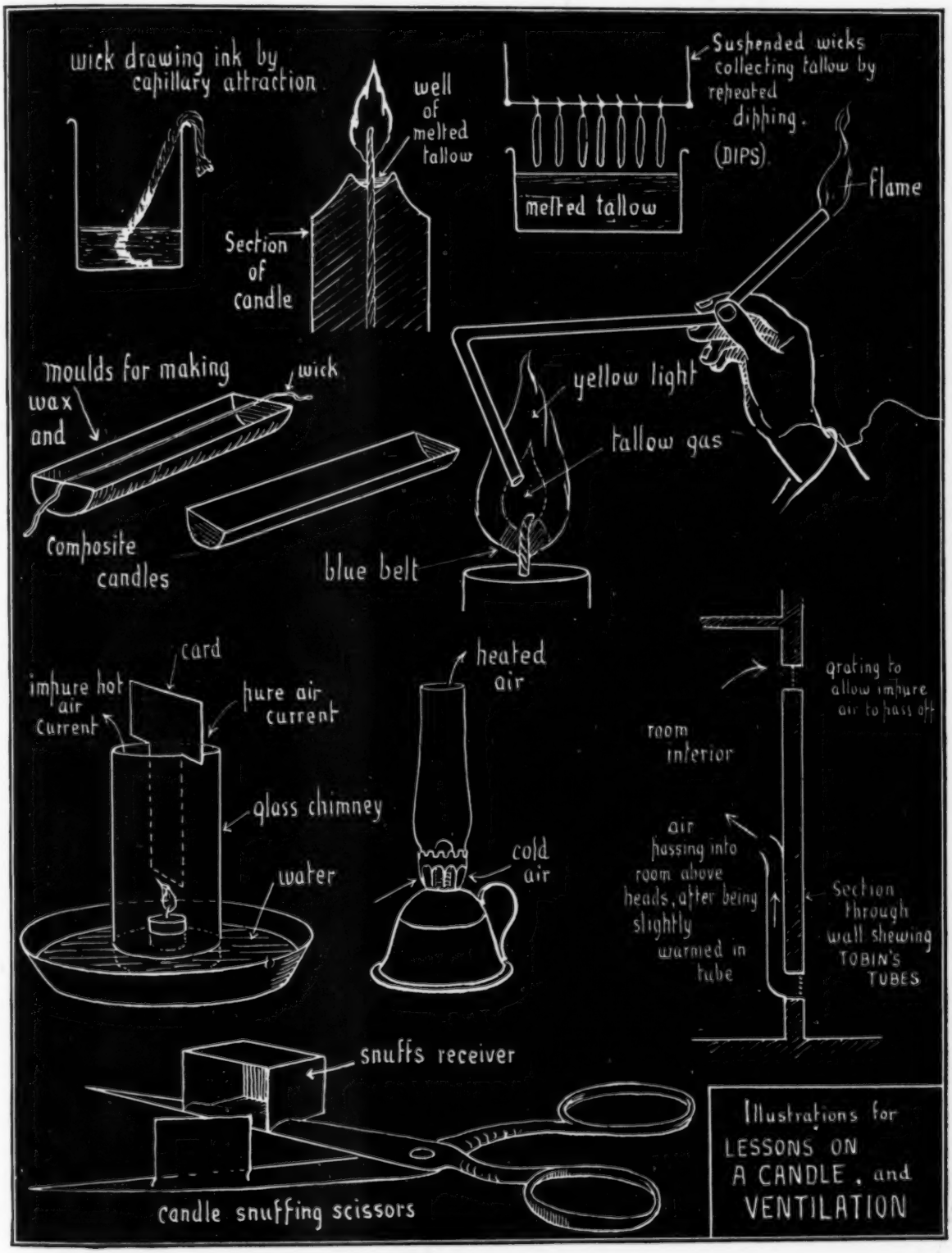
Articles of Illustration.—A lamp-chimney (preferably one that bulges out towards the base), a lamp-burner, saucer, piece of cardboard shaped like a T-square to just fit the aperture of the lamp-chimney, a piece of candle, a taper or a piece of brown paper which smokes readily.

Experiment and Observation.	Result or Inference.
Refer to the former lesson for impurities which may vitiate the air, and ask for remedy.	The practical remedy in these cases is to renew the air.
Tell the class that a grown-up person requires about 6,000 cubic feet of fresh air every hour. Measure the area of the classroom, and multiply by the height to a maximum of 12 feet. Divide by the number of children in the room.	The cubic contents of the room divided by the number of children will give the amount of air space allowed for each child. Hence we can find out how often during the hour the air must be renewed so as to give the amount of fresh air required.
Take a lamp-chimney, stand a small piece of candle in a saucer in which is a little water, light the candle, stand the chimney over it.	The candle goes out in spite of the fact that the chimney is open at the top. Evidently the fresh air cannot get to it.
Repeat the experiment, but insert the cardboard division in the lamp-chimney, so that the crosspiece of the T-square rests on the top, and the bottom comes just above one side of the flame.	The candle burns readily. Evidently the fresh air now has access to the flame.
Take a smoking taper or piece of brown paper, hold the smouldering end successively over each side of the cardboard partition.	By means of the direction of the smoke, we see that a current of air sets down one side and up the other side of the partition.
Sum up results thus far.	1. The air in a room needs to be periodically renewed. 2. An inlet for fresh air must be provided. 3. An outlet for bad air must be provided.
Hold the lighted taper towards the lower part of the aperture caused by the partially opened classroom door.	The flame is strongly blown inwards, showing that a current of fresh air is entering the room.
Repeat the experiment, holding the taper just above the fire, between the fire and the mouth of the chimney.	There is a strong current of air setting out from the room up the chimney.
Hold the lighted taper in front of various ventilating apertures about the room.	The incoming currents of air are usually towards the floor of the room; the outgoing currents of air are above.
Rest the candle on the top of the lamp-burner, insert chimney, show how air can now get access from below. Hold lighted taper above and below the chimney.	The air enters from below. Hence we can see how the flame of an ordinary lamp is enabled to keep alight.
Let a girl hold her hand above the chimney.	The outgoing air is warm. Warm air is lighter than cold air.
Sum up the results obtained.	To obtain a renewal of the air in a room, we need— 1. An inlet for fresh air. 2. An outlet for impure air. Warm air is lighter than cold air. Outlets for impure air are therefore best placed towards the top of a room. Inlets for fresh air are best placed towards the lower parts of a room.

Additional Information.—A lofty ceiling does not make up for deficiency of floor space. The space above 12 feet from the floor should not count in reckoning the cubic capacity of air required, since air above this height has a tendency to become stagnant. The Board of Education requires 10 square feet area for each child, and a minimum height of 12 feet, giving a capacity of 1,200 cubic feet.

BLACKBOARD ILLUSTRATION.

BY C. ARMSTRONG, ART MASTER AND SOUTH KENSINGTON EXAMINER; PRINCIPAL OF ARMSTRONG'S DRAWING SCHOOL.



PRACTICAL ELEMENTARY SCIENCE.

AN EXPERIMENTAL COURSE COVERING THE REQUIREMENTS OF BOTH THE DAY AND EVENING SCHOOL CODES IN PHYSICS AND CHEMISTRY.*

BY THOMAS CARTWRIGHT, B.A., B.SC.

Mortar and Cement.—In order to understand well the chemical action concerned in the formation and setting of mortar, the scholar must be able to fully appreciate what is meant by lime-water becoming milky when carbon dioxide is passed into it. It has already been shown that this reaction is really the building up of chalk or calcium carbonate from lime (or calcium oxide) and carbon dioxide, and every care must be taken to make the pupil regard this reaction as the usual result of bringing lime and carbon dioxide together. Another experiment that will enforce this, and at the same time draw attention to the existence of carbon dioxide in the air, is the exposure of a saucerful of lime-water to the action of the atmosphere; and this experiment should also be repeated, as a necessary preliminary to the study of mortar.

Lime and Sand.—On one plate should be placed a handful of sand, on another a handful of lime, and on a third a mixture of sand and lime in the proportion of three parts of sand to one part of lime. Water should be poured upon each of the three plates, the contents of which should be well mixed therewith. What occurs should be noted and recorded, after which the plates should be left to the action of the air for two or three days, when an examination of their condition should again be made.

Old Mortar.—A specimen of mortar from an old building should be obtained, and, after having been finely powdered, should be given to as many of the scholars as possible for examination. A portion of the powder is placed in a test-tube, and vinegar or other acid is poured upon it, care being taken to observe all that takes place; and if there is any fizzing or effervescence, an attempt must be made to pour the gas that is thus shown to be coming off into some lime-water, as was done in previous experiments. By this means it will be easy to get the pupils to tell you that mortar contains some carbonate; and a little questioning as to what mortar is made of will establish the further fact that this is calcium carbonate. The same process should be gone through with respect to freshly-made mortar; and here there should be no need for telling, for the pupil should be expected to discover by himself, as an inference from these two experiments, that old mortar differs from the freshly-made variety in containing calcium carbonate—that is to say, as mortar gets older, the lime that it contains is changed into calcium carbonate. Here, again, there must be no hurry. It will be wise to have the two experiments performed again and again until this important inference has been really grasped. Then comes the question of how the change has been brought about; concerning which there will be little difficulty, if the two facts as to the presence of carbon dioxide in the air, and the ease with which this body combines with lime, have been well driven home. The lime of the mortar is in contact with the carbon dioxide of the air, and the combination follows as a matter of course. Is the union quick or slow? A question as to the time required for the mortar in a new building to set, together with an observation of a piece of new and a piece of old mortar, should be all that is required to settle this point, and to lead up to the further point that it is the outside of the mortar that is changed, the inside showing very little effervescence when treated with acid, even in the case of old mortar.

The Water.—This, of course, renders the setting more tedious, as water is formed, and evaporation is essentially a slow process. When slaked lime and carbon dioxide unite to form calcium carbonate, this makes the setting a still more lengthy process than it otherwise would be. To impress upon the minds of the scholars the fact that carbon dioxide is necessary to the setting of mortar and plaster (which also consists largely of lime), it may be mentioned that it is a common practice to burn wood or charcoal in newly-plastered houses which it is desired to get quickly ready for habitation. The scholars should be required to give a clear explanation of the why and wherefore of this.

The Sand.—It will be very necessary, whilst on this subject of mortar, to call special attention to the sand. A specimen of sand with sharp, angular grains, and another the particles of which are round, should be provided, and the children should be invited to say which of the two specimens is the better suited for making mortar. Is sand hard and lasting? Will the grains stick into the lime any the better for being sharp or angular? Why is it usual to postpone the papering of new walls for several months, and even for a year? The scholar should not fail to understand that the new-built house is kept damp not only by the evaporation of the water with which the lime and sand were mixed when the mortar was made, but also by that which is chemically produced by the action of the slaked lime upon the carbon dioxide of the air. It will perhaps be wise to warn pupils that if the speedy method of drying by means of coke fires be employed, it will be necessary to have the rooms well ventilated before using them, as not only is carbon dioxide, a dangerous gas to breathe, produced, but varying quantities of carbon monoxide, a much more poisonous substance, are produced at the same time. Even small quantities of this are sufficient to cause death when breathed.

Hydraulic Cements.—The action of mortar in setting by uniting with carbon dioxide being well understood, a little time may profitably be spent in the consideration of the action of cements that set under water. Specimens of Portland cement and of Roman cement may readily be procured. These should be mixed, and should afterwards be placed under water, and then be left to set. The time of setting should be noted. The presence of clay in each of the two specimens of hydraulic mortars should be especially pointed out, the amount varying from 20 to 30 per cent. It may also be told that these cements are made by grinding the mixture of chalk or limestone and clay together, and then roasting them in a kiln much in the same way as was done with the limestone in the limekiln; and the pupils should be expected to add that it is done for the same reason—namely, to convert the chalk or limestone into lime. As to the action of hydraulic cements in setting, this is partly due to the reformation of carbonate, exactly as in the consolidation of mortar; and it will be profitable for the class to explain where the carbon dioxide comes from with which the lime of the hydraulic cement combines. Can it be from the water that the carbon dioxide comes? This question should be made to lead up to the facts—(1) that carbon dioxide is soluble in water; (2) that there is always a small proportion of the dioxide in air; (3) that all living creatures, both plants and animals, breathe in oxygen and breathe out carbon dioxide exactly as we do ourselves; and here the experiment of breathing into lime-water may appropriately be repeated in support of this statement. But it will be necessary, in the interests of accuracy, to further state that when the cement is moistened, chemical action takes place between the constituents of the clay and lime, whereby certain solid, water-resisting bodies are produced, which greatly aid the process of consolidation.

Plaster of Paris.—To complete the subject, a specimen of native gypsum should be shown in juxtaposition with its derivative plaster of Paris; or, better still, some powdered gypsum may be heated in an oven, the temperature of which must not be allowed to rise above 120° C., when the gypsum will be converted into plaster of Paris. If the crucible and its contents are weighed both before and after the heating, it will become evident that the change has been brought about by the heat driving off something from the gypsum, and, of course, the presumption (a wrong one) will be that the something thus driven off is carbon dioxide. How may this be put to the test? It will be disappointing if the children do not suggest the testing of gypsum by pouring acid on it. This will effectually dispose of the supposition that gypsum contains carbon dioxide, but it will not tell us what it is that the gypsum really does part with when heated.

* Books referred to in this series of articles are published by T. Nelson and Sons.

It will not be difficult to devise an experiment to prove that moisture is given off. For example, a large bell-jar may be held over the crucible containing the gypsum, whilst it is heated by means of a blowpipe; or, better still, a piece of hard glass (combustion) tubing may be fitted with a long L-shaped piece of glass tubing, the end of which passes through a cork nearly to the bottom of a flask that is kept cool by standing in water. Then, if a sufficiency of the powdered gypsum is placed in the hard glass tube, and is heated to the desired temperature, enough water may be collected to boil and freeze, whereby it may be conclusively proved that the loss in weight of the heated gypsum is caused by the separation of water. The next step will be the making of a stiff paste with plaster of Paris and water, and an observation of the time taken by it to set. This will lead up to a catechism as to what has become of the water; and if the making of plaster of Paris has been well understood, it will be surprising if the students do not at once see that the setting is due to the reunion of the plaster with the water, of which it had been deprived in the so-called "burning." It is solely on account of this property of quickly setting to form a smooth, white, hard surface that plaster of Paris is employed to finish off the ceilings and walls of houses. Its action as a cement is also due to its ready combination with water to form a hard, solid, adherent mass. It will interest the children to know that the city of Paris is built on rocks of gypsum, which have been extensively quarried for the supply of building stone. The following brief form of statement will be useful in fixing upon the minds of the children the main points of what has been said:—

Setting of Mortar.

Slaked lime and carbon dioxide } unite to form { calcium carbonate and water.

Setting of Plaster of Paris.

Plaster of Paris and water } unite to form { gypsum.

Washing Soda.—A specimen should be examined by every scholar by means of acid and lime-water, in order to show that it is a carbonate. Red litmus should be poured into it, in order to show that it acts like lime in changing the red colour to blue. Let some of the soda solution be tasted and felt, and compared with lime-water, and, if possible, with solutions of caustic soda and ammonia. Impress upon the children the importance of the soapy taste and feel, and the property of turning vegetable reds blue. Bodies endowed with such properties are said to be alkaline. Show that they have great cleansing powers, by placing a piece of grease-stain cloth in alkaline solutions, and also by shaking up some oil with them. By means of acid and lime-water, lead the children to see that of these alkalies only washing soda is a carbonate, and tell them that it is exceptional for carbonates to possess alkaline properties, but that it is the possession of such properties that gives washing soda its value as a cleanser. With a piece of platinum wire dipped in hydrochloric acid and then in powdered chalk and washing soda, it may be shown that, although these two bodies agree in giving off carbon dioxide when acted upon by acids, there is evidently a difference in their composition, as is shown by the different coloured flames that result. It will be advisable to dip one end of the wire in the chalk and the other end in the soda, as the flames produced last so long as to mask any others that may be due to other substances. The pupils may be told that the yellow colour is due to the metal sodium, as may easily be shown by putting a piece of sodium in water, and by dipping the wire therein and then placing it in the flame. It will not be possible to prove in the same way that the brick-red flame is due to the metal calcium, as the metal is very expensive; so that the pupils will have to take this on the authority of the teacher, who may, however, show that the same metal is found in both gypsum and chalk, since both give the same brick-red flame.

The Seidlitz Powder.—Each pupil should be provided with two test-tubes, one of which contains some lime-water. In the other is placed a mixture of either washing or bread soda (bicarbonate) and tartaric acid; water is poured upon the mixture, and the test-tube containing it is so tilted as to allow any gas that may come off to fall into the lime-water, which is shaken up from time to time. The pupils should be called upon to explain what has taken place; and the experiment should be utilised for yet another, on the decomposing action of acids upon carbonates, with the further addition of the fact that in this case we have made use of a solid acid. They may be told that the seidlitz powder, with its two papers, is just such a mixture as we have employed, and that the stimulating effervescence is produced by the action of the solid acid upon the solid carbonate. "Why must the water be added?" will perhaps be asked by a curious child. If so, the opportunity will present itself of its own accord for explaining that chemical action requires that bodies must be brought into very close contact, and that bodies in solution are brought much closer together than is possible by merely mixing them together as powders.

Aërated Drinks.—Into a flask containing lime-water run some soda-water from a siphon. It will be best to use a flask, in order to prevent the lime-water from being driven out by the soda-water. What is to be inferred from the milkiness that results? It is evident that carbon dioxide is contained in soda-water, and the same is true of all effervescent drinks. The carbon dioxide is forced in by machinery, so that there is very much more present than can be held in solution. In fact, the amount of carbon dioxide present is so great as to exert very great pressure upon the sides of the bottle, which is accordingly made of very thick glass. It may be observed that the carbon dioxide has no action upon the body beyond the production of a stimulating tickling of the walls of the stomach, and that the gas is used in preference to others because it is so readily produced in large quantity, and because, although it kills when breathed, it has no ill effects when taken into the stomach.

Conclusion.—Many other experiments might be mentioned in which this very important gas plays a prominent part, but enough has been said to exhibit its more striking properties. And now the lesson and the course must be brought to an end, the writer hoping that as much pleasure and profit has been obtained by some of his readers as he has personally derived from his congenial task of catering for the wants of practical teachers of practical elementary science.

Commercial Holiday Course.—This is one of the newest developments in the way of holiday courses. It is the second annual gathering organised by the Association des Professeurs des Écoles de Commerce Suisse, with the support of the Swiss Confederation and the town of Geneva. The course is *gratuitous*, and will be held at Geneva from July 15 to July 31, in the Higher Commercial School, Rue Général Dufour. Although established in favour of the association referred to, teachers of commercial subjects in our schools will be cordially welcomed to the lectures. Ten distinguished professors are announced to lecture upon the various and interesting subjects directly or indirectly connected with "commerce," during the mornings of the dates mentioned. The afternoons will be given up to excursions in and around the district, including *le tour du Lac de Genève*, which will afford opportunity of visiting the Cantonal Exhibition at Vevey. Arrangements have also been made that will enable teachers to attend the Modern French Courses under the direction of Professor Bernard Bouvier at the Geneva University during the month of August at a reduced fee.

Bell's Cathedral Series.—We are glad to draw attention to Messrs. G. Bell and Sons' series of monographs, planned to supply visitors to the great English cathedrals with accurate and well-illustrated guide books at a popular price. The volume before us, which deals with the Cathedral Church of Canterbury, contains a description of its fabric and a brief history of the archiepiscopal see, together with a large number of specially-selected and well-printed illustrations. They appear to be well-planned, scholarly manuals, and visitants to any of our English cathedrals should not be without the necessary volume in this most helpful series.

OUR TUTORIAL SECTION

OUR PUPIL TEACHERS' AND SCHOLARSHIP COURSE.

BY ARTHUR T. FLUX,

Principal of the Belvedere Pupil Teachers' Centre, First on Scholarship List; Author of "Scholarship School Management," "Building of the British Empire," etc.

SPRING EXAMINATION, 1902.

Fourth Month—July.

WORK TO BE PREPARED.

1. READING AND REPETITION.

REGULAR oral practice in these subjects is necessary, and a full and intelligent appreciation of the poem or book is required.

2. ENGLISH.

Candidates.—Gray's *Elegy*, verses 13–16. Learn derivation of all important words. Analyse the whole, and parse all words presenting difficulty.

First Year.—The *Expostulation*, as far as line 84, or *The Task*, Book V., lines 70–100.

Second Year.—*Paradise Lost*, Book III., lines 203–273.

3. COMPOSITION.

Write one or two essays each week from the list given in the *Pupil Teacher's English Notebook*.

4. HISTORY.

Candidates.—The Lancastrian and Yorkist kings, 1399–1485.

First Year.—Edward I. and Edward II.

Second Year.—James II.

5. GEOGRAPHY.

Candidates.—England: Southern and Midland Counties in detail.

First Year.—Russia and Austria.

Second Year.—North America: physical features, climate, and productions.

6. ARITHMETIC.

Candidates.—Complex and continued fractions. Application of vulgar fractions to weights and measures.

First Year.—Profit and loss.

Second Year.—Harder examples in stocks.

7. ALGEBRA AND EUCLID.

First Year.—Euclid: Props. 9–12, with two deductions per week. Algebra: division.

Second Year.—Euclid: Props. 39–42, with four deductions per week. Algebra: continued exercise in fractions.

8. MUSIC.

Finish the syllabus.

Notes on the Work for the Month.

1. ENGLISH.

Candidates.—GRAY'S "ELEGY," verses 13–16.

General Paraphrase (continued).

Verse 13. But the stores of information which study had steadily accumulated through centuries of patient investigation were never laid open to them, and any natural inclination to higher and greater thoughts, any development of the nobler side of their nature, was cramped and stifled by the continual drudgery necessary to earn a scanty living.

Verse 14. Thus what might, under other circumstances, have been an ornament to their country was entirely lost, as if some magnificent pearl were hidden in the deep recesses of the ocean bed, or as a flower blooms in all its beauty unappreciated, because far away from the haunts of man.

Verse 15. Yet in this quiet spot may rest one who asserted his rights against some petty act of tyranny as boldly as Hampden; one who might, with similar education, have rivalled Milton as a poet; one who possessed as great administrative talents as Cromwell, which, happily for himself and the people, he could never use.

Verse 16. Their humble lot in life prevented them from earning the warm applause of large and well-educated audiences, from despising the sordid cares of the future, from being able to add largely to the happiness of their country, or from feeling that their personal history was indeed a large part of the history of their fatherland.

Notes on Parsing and Analysis.

Verse 13. *Knowledge.* Personified. Feminine gender.
Rich with the spoils of Time. Enlargement of *page.*
Did. Auxiliary—not of emphasis in this case—used to form a past tense.

Verse 14. *Full.* Adverb, modifying *many.*
Many a gem. *Many* is multiplicative in this sense.
To blush. Infinitive of purpose; so also (*to*) *waste.*
Unseen. Used as an adverb, modifying *to blush.*

Verse 15. *Some.* See note on verse 12.
Tyrant. Objective, governed by *withstood.*
May rest. The subjects are *Hampden, Milton, Cromwell.*

Verse 16. *To command, to despise, to scatter, to read,* are objects after *forbade* in the next verse.
Plenty. Abstract noun, objective, governed by *scatter.*

COWPER'S "TASK," BOOK V.

General Paraphrase (continued).

Line 70. As soon as every grain has been carefully picked up, their only care is to seek some sheltered corner when the faint warmth of the sun reaches them, or some shed which affords protection from the icy wind. The cock, that usually struts about with such a proud and lordly mien, now wades dejectedly before them through the snow, and seems to keenly resent the conditions which compel him to adopt such an undignified mode of walking.

And what becomes of the thousands of small birds that, during the summer months, make hill and vale melodious with their merry warblings? They certainly can find no food from the earth. The worm is safe beneath the frozen turf; there are no seeds available; even the berries of the hawthorn on which the thrush feeds (though some may deny this) are so thickly covered with snow as to be out of reach.

A long spell of snowy and frosty weather such as this must cause the death of thousands of these small friends of ours. Their dead bodies are not seen, for, as if by instinct, they bury themselves by creeping into holes and crevices, where they starve to death.

Even the rooks and jackdaws desert the fields and betake themselves to the wayside, where they pick up a scanty subsistence from the fragments dropped by passing travellers, horses, and carts.

The streams are frozen over, and entirely obliterated by the snow accumulated on them, though the water still flows silently beneath.

Notes on Parsing and Analysis.

Line 70. *Riddance.* Nominative absolute.
Only. Adjective, limiting *care.*
71. *Search.* In apposition to *care.*
75. *To resent,* etc. Completion of the predicate *seems.*
77. *How.* Interrogative adverb.
Find. The object is *due sustenance* (79).
80. *Nought.* Direct object of *yields.*
82. *Covered.* Participle, used adverbially, modifying *lie.*
Close = closely.
88. *Self-buried.* Adjective, qualifying *thousand.*
89. *Very.* Adjective of emphasis.

Full notes, etc., on the *Expostulation* will be found in the edition recommended, published by T. Nelson and Sons, 35 Paternoster Row.

Second Year.

Full notes on parsing, analysis, etc., will be found in *Paradise Lost*, Book III. (Messrs. Nelson and Sons, 35 Paternoster Row), which every pupil teacher should get.

2. HISTORY.

***Candidates.*—A genealogical table must be prepared and learnt, showing Henry the Fourth's descent, and also that of the House of York. Henry can hardly be called a usurper, since he was formally elected by the Parliament. Elevated to this position by the combined influence of church and nobility, he found his lot not a very comfortable one. The church obtained the statute De Heretico against the Lollards, the barons on four occasions rose in revolt, and the House of Commons made great progress in curtailing the kingly prerogative.**

Freedom of speech in Parliament was affirmed.

The constitution of the royal household was attacked.

A council of sixteen members was appointed to advise the king. Money grants were not to be altered by the Lords, or discussed in the presence of the king.

Henry the Fifth. The chief interest centres in the brilliant campaign in France and the battle of Agincourt.

Henry the Sixth. Note the regents at home and abroad, and the gradual loss of the French possessions. Life of Joan of Arc. Cade's rebellion. Quarrels of Somerset and York. Madness of the king. York as regent. Recovery of the king, and outbreak of the war. Prepare a table showing the battles, leaders, and results of each.

It must be carefully noted that this series of engagements, so disastrous to the nobility, was scarcely felt by the people. It was a war in which the rival barons and retainers fought desperately, until they nearly exterminated each other, and finally destroyed the Feudal System.

Edward the Fourth. The able general, but indolent and lascivious king, and Warwick the King-maker, are the chief characters in the former's reign.

First Year.

The reign of Edward the First is very important. His chief ideas were (1) to bring the whole of the island under one ruler, and (2) to establish a firm rule of law and justice. He practically succeeded in the former by conquering Wales and Scotland, and he made many important legal reforms, and reorganised the law courts. These points must be carefully prepared. The chief statutes were :—

1275. *First Westminster*—elections to Parliament to be free; fixed the feudal aids.
1278. *Statute of Gloucester*—regulating the proceedings of the county and manor courts.
Quo Warranto Writs—to inquire by what right the barons held their lands. This was necessary, because during the disputes of the preceding reign much of the Crown lands had been appropriated or stolen.
1279. *Statute of Mortmain*—to prevent sham surrender or gifts of land to the church. In either case the revenue of the king suffered.
1284. *Statute of Wales*—by which Wales was placed under English law.
1285. *Second Westminster*—instituted the law of entail, and appointed judges to take the assizes.
Statute of Winchester—making many useful police regulations.
1290. *Quia Emptores*—to prevent subinfeudation.

Reorganisation of the Law Courts.—All important cases had previously been decided by the Magnum Concilium or the Curia Regis. The work had become so great that the necessity for a permanent court was obvious, and hence were formed—

(1) The Court of King's Bench—for matters affecting sovereign.
(2) The Court of Exchequer—dealing with revenue.
(3) The Court of Common Pleas—for trials between private persons.

Edward the Second. The chief points are:—The king's favourites; the Scottish War of Independence, and the battle of Bannockburn; the Lords Ordainers.

Second Year.

James the Second. Monmouth's rebellion, and the Bloody Assize. The attempts to reintroduce Roman Catholicism. Declaration of Indulgence. Trial of the Seven Bishops, and the Revolution.

3. Geography.

This month's work is mainly text-book only. Sketch-maps must be drawn for each country prepared. The plentiful use of such maps, and reading from every possible source, are the only means of obtaining a full knowledge of the countries.

4. Arithmetic.

Candidates.—Complex fractions need careful attention, especially the rule of signs. All multiplication and division operations must be concluded before any addition or subtraction is done.

In applying fractions to weights and measures, the commonest mistake is to always reduce the quantity to a fraction. Thus, most pupil teachers would work the sum $3\frac{3}{4}$ of £5, 16s. $8\frac{1}{2}$d. by reducing $3\frac{3}{4}$ to $\frac{15}{4}$, and the money to fractions of a penny, instead of multiplying the money by 3 and adding on $\frac{1}{4}$ of this product *without* reduction.

First Year.—The greatest care must be taken in these sums to consider always the cost price as 100 for each transaction. For example: A sells at a gain of 10 per cent. to B. B sells at a gain of 10 per cent. to C. The total gain is NOT 20 per cent. Let A's cost price = 100. He sells for 110. B then sells for 110 + 10 % of 110, or 110 + 11, = **121**. Total gain, 21 per cent.

The following are typical questions from back papers :—

1. At an examination in which full marks were 1000, A got 20 per cent. more than B, B 10 per cent. more than C, C 20 per cent. less than D. If A got 660, what percentage of full marks were obtained by D?

Ans.—When A gets 120, B gets 100; when B gets 110, C gets 100; when C gets 80, D gets 100. Multiplying the first ratio by 11, the second by 10, the third by $12\frac{1}{2}$, we get A : B : C : D :: 132 : 110 : 100 : 125. Therefore A : D :: 132 : 125. If A = 660, D = 625—that is, 62·5 per cent. of the total.

2. A man gains 20 per cent. on one-fourth of his capital, 40 per cent. on one-third, and loses 24 per cent. on the remainder. What is his gain or loss per cent. on the whole capital?

Solution.—The fractions in the three investments are $\frac{1}{4}$, $\frac{1}{3}$, $\frac{5}{12}$ of the capital. Suppose capital to be £1200.

Then on $\frac{1}{4}$, or £300, the gain is 20 per cent., or £60.
,, $\frac{1}{3}$, or £400, ,, ,, 40 ,, or £160.
,, $\frac{5}{12}$, or £500, the loss is 24 ,, or £120.

The total gain is £100 on £1200, or $8\frac{1}{3}$ per cent.

3. Income tax was reduced from $7\frac{1}{2}$d. to 6d. in the £, but a man's gross receipts were at the same time reduced by $3\frac{1}{2}$ per cent. Find by what percentage his net income was altered.

Suppose his original gross income were £800.
Then income tax at $7\frac{1}{2}$d. in the £ = £25.
∴ net income = £775.
Income falls $3\frac{1}{2}$ per cent., or £25 on £800.
Second income = £775.
Income tax on £775 at 6d. in the £ = £19, 7s. 6d.
∴ net income = £755, 12s. 6d.
Loss on £775 = £19, 7s. 6d.

$$\text{,, } £1 = \frac{£19,\ 7s.\ 6d.}{£775}.$$

$$\text{,, } £100 = \frac{£19,\ 7s.\ 6d.}{£775} \times 100 = 2\tfrac{1}{2} \text{ per cent.}$$

4. A man makes a profit of $2\frac{1}{2}$ per cent. by selling an article for £1, 1s. $4\frac{1}{2}$d. How much per cent. would he make by selling it for £1, 1s. 3d.?

Let cost price = 100.
Then £1, 1s. $4\frac{1}{2}$d. = $102\frac{1}{2}$.

$$1 = \frac{102\frac{1}{2}}{£1,\ 1s.\ 4\frac{1}{2}d.}.$$

$$£1,\ 1s.\ 3d. = \frac{102\frac{1}{2} \times £1,\ 1s.\ 3d.}{£1,\ 1s.\ 4\frac{1}{2}d.} = 102.$$

Therefore a gain of 2 per cent. would be made.

5. A sold some goods to B, making a profit of 10 per cent. B sold them for £6, 1s., making a profit of 10 per cent. What did A pay for the goods?

Let A's cost price be 100. Then he sells to B for 110. B sells for 110 + $\frac{1}{10}$ of 110 = 121.

Then cost price of 121 = 100.
∴ £6, 1s. = £5. Ans.

6. A sells a horse to B at a loss of 10 per cent. B resells the horse to A at a gain of 10 per cent. What percentage of the original cost has A gained or lost by the double transaction?

Let A's cost price be £100. He sells to B for £90. B resells to him for £99. A has the horse again, and is £9 out of pocket. Therefore he has lost £9 on the £100, or 9 per cent.

Test Questions.

(These are corrected, if desired, at a nominal charge.)

1. *English.—Candidates.*
(1.) Analyse verse 11, and parse *can*, *call*, *Honour's hands* (l. 47), *might have swayed* (l. 47).
(2.) Give the meaning and use of the suffixes in the following words: *homeward*, *landscape*, *stillness*, *breezy*, *homely*, *inevitable*.

First Year.
(1.) Paraphrase lines 21–32, *Expostulation*.
(2.) Analyse lines 24–30, and parse *not*, *alone*, *again*, *let*, *or only what*.
Or (1.) Paraphrase lines 58–70, *The Task*, Book V.
(2.) Analyse lines 58–70, and parse *diligent to catch*, *half*, *too deep*, *to seize*, *often scared*, *as oft return*.

Second Year.
(1.) Paraphrase lines 185–197, *Paradise Lost*, Book III.
(2.) Analyse the same lines, and parse *rest*, *state*, *betimes*, *what*, *as a guide*, *light*, *sate*.

2. *History.—Candidates.*
(1.) Under what circumstances were the Commons first summoned to Parliament?
(2.) Give a description, with a plan, of the battle of Bannockburn.

First Year.
(1.) Say what you can of the results of the Crusades on Western Europe. How many crusades were there in all?
(2.) Give an account of the loss of the French provinces in the reign of John.

Second Year.

(1.) Contrast the foreign policy of Charles the Second and of Cromwell.

(2.) What do you know of the Habeas Corpus and Test Acts?

3. *Geography.—Candidates.*

(1.) Give an account of Yorkshire under these heads:—(1) Physical features; (2) industries; (3) chief towns.

(2.) Describe a coast voyage from Newcastle to London.

First Year.

(1.) Say what you can of the industries, imports, and exports of Holland and Belgium.

(2.) Write brief accounts of the Midnight Sun, the Fiords, the Maelstrom, the Zuyder Zee.

4. *Arithmetic.—Candidates.*

(1.) Make and explain diagrams to illustrate the following:—

$\frac{1}{2}(\frac{1}{3} - \frac{1}{4}) = \frac{1}{24}$; $(\frac{1}{3} - \frac{1}{4}) \div \frac{1}{4} = \frac{1}{3}$.

(2.) Simplify $1\frac{1}{4}$ of $\dfrac{\frac{1}{2} + \frac{1}{3} + \frac{1}{4}}{2\frac{1}{2} - 3\frac{1}{3} + 4\frac{1}{4}} \times \dfrac{2\frac{1}{2} + \frac{7}{12}}{\frac{3}{4\frac{1}{2}} + 4\frac{1}{2}}$. Ans. $\frac{1}{4}$.

(3.) Find the difference between

£2, 17s. 6d. / £12, 18s. 9d. and 2 cwt. 2 qrs. 10 lbs. / 12 cwt. 0 qr. 19 lbs. Ans. $\frac{1}{12}$.

First Year.

(1.) A man's premium of insurance, at £2, 2s. 8d. per cent., amounts to £53, 6s. 8d. What is the sum insured for? Ans. £2500.

(2.) For what sum should a ship worth £7250 be insured, at £3, 6s. 8d. per cent., so that the owner might recover, in case of loss, the value of the ship and insurance? Ans. £7500.

(3.) A warehouse contains goods worth £17230, and is insured only for 86·3 per cent. of its value. What sum would be lost in the event of its destruction by fire? Ans. £2360, 10s. 2½d.

Second Year.

(1.) What principal will amount to £42998·1696 in eight years at 20 per cent. compound interest per annum? Ans. £10000.

(2.) If I save £10 yearly, and invest it at 3 per cent. per annum, and always put in the interest together with the saving for the four following years, what sum shall I have at the end of the time? Ans. £53, 1s. 9·92d. +

(3.) £800 is put out at interest at 5 per cent. per annum, and at the end of each year £120 is deducted for the expenses of the next. What is left at the end of the sixth year? Ans. £255. 16s. 11d. +

AUTUMN EXAMINATION, 1901.

Ninth Month—January.

WORK TO BE PREPARED.

1. READING AND REPETITION.

Continued oral practice for those not yet examined, and private reading of any good English classics. At least one good book should be read per month.

2. ENGLISH.

Candidates.—Marmion, Canto vi., lines 902-1021.

First Year.—The Traveller, lines 377–412. Twenty roots and meanings per week, and the derivation of all important words in the passage set for preparation.

Second Year.—Julius Cæsar, Act v., Scenes 1, 2, and 3.

3. ESSAYS.

Write one or two essays each week, selecting from the following:—*Social Life in Norman Times; A Winter Evening; Snow; Fairy Tales; The "Good Old Days" compared with the Present; Autumn Flowers; The Use of Pictures in School; Patriotism.*

4. HISTORY.

Candidates.—Anne, George I., and George II.

First Year.—Henry VIII.

Second Year.—George III. (1800–1820), and George IV.

5. GEOGRAPHY.

Candidates.—Ireland: physical features, climate, and productions.

First Year.—India: physical features, climate, and productions.

Second Year.—Australia: physical features, climate, and productions.

6. ARITHMETIC.

Candidates.—General problems in proportion.

First Year.—The metric system.

Second Year.—Continue exercises in mensuration.

7. EUCLID.

First Year.—Revise definitions, axioms, and postulates, and Props. 1–10, with six deductions each week.

Second Year.—Revise Props. 19–26, with eight deductions each week.

8. ALGEBRA.

General practice. All back problems should be worked, special attention being given to factors.

Notes on the Month's Work.

1. ENGLISH.

Full notes have been given on these subjects. If any difficulty is met with, students are invited to write to me direct about it.

2. HISTORY.

Candidates.—The reign of Anne is important, because it is the completion of the policy initiated by William the Third with regard to government by party and the limitation of the power of Louis the Fourteenth (*Le Grand Monarque*).

The chief interest centres in the War of the Spanish Succession, in which Marlborough demonstrated his superiority over all the French marshals who opposed him.

Plans of the chief battles should be prepared, and a life of Marlborough.

The other chief points are: the union of Scotland with England, which must be thoroughly understood; the rival Whigs and Tories; the trial of Dr. Sacheverell; and the Treaty of Utrecht.

George I.—Prepare a table showing his descent and his right to the throne. The Jacobite Rebellion of 1715. The Riot Act. The South Sea Bubble, and Walpole's action. "Wood's Halfpence" in Ireland. Walpole's administration.

George II.—The Spanish War. The War of the Austrian Succession. The Seven Years' War. Prepare carefully the causes of each, the chief battles, the treaties and results.

First Year.—Henry VIII.—1. Foreign affairs: the Holy League; Flodden; the Field of the Cloth of Gold. 2. Internal affairs: Wolsey and his rise must be noted; but by far the most important fact of history is the commencement of the Reformation. Copy and fill out in notebooks the following:—

1. Causes—
   - (a) The wealth and corruption of the clergy.
   - (b) The papal schism.
   - (c) The personal character of the popes—some of them extremely bad men.
   - (d) The sale of indulgences—opposed by Luther, who was excommunicated; hence the beginning of the movement.
   - (e) The invention of printing and the revival of learning opened men's minds to church affairs.
2. The Reformation in England.

   Henry was not a Reformer. In order to obtain his divorce, he cut off the English Church from Rome, but he executed at the stake alike Protestants and Roman Catholics who denied his supremacy. To vent his displeasure against the Pope, he abolished the monasteries, and helped forward the Reformation unknowingly. The chief events were:—
   - 1524. Visitation of the monasteries; forty of the smaller suppressed.
   - 1529. Fall of Wolsey.
   - 1531. Henry supreme head of the church.
   - 1533. Divorce of Catherine.
   - 1534. Act of Supremacy.
   - 1536. Suppression of the smaller monasteries.
   - 1537. The Pilgrimage of Grace. (Note that the poor people objected to the change in religion; the monasteries had been their best friends.)
   - 1538. Henry excommunicated.
   - 1539. Dissolution of the larger monasteries. Statute of Six Articles.

3. What did the Reformers want? In what respects did they differ from the Roman Catholics?

   At first the Reformers wanted, as the name implies, to *reform* the church; they had no desire to separate themselves, but they were driven out of the church. They were called Protestants because they protested against the actions of the church. The chief points of difference were (see Statute of Six Articles):—
   - (1.) The Romanists believed in transubstantiation—that is, that the *substance* of the bread and wine was actually changed into the *substance* of the body and blood of Christ. This the Protestants opposed.
   - (2.) The Romish Church gave only the bread or wafer to the laity, and denied them the cup.
   - (3.) In the Romish Church priests were not allowed to marry.
   - (4.) They also believed in compulsory private or auricular confession.
   - (5.) They thought that saying masses for the dead would release them from purgatory.

   There were many other points, but these were the ones which were debated most strongly. Each side was fiercely intolerant towards the other.

Second Year.—From 1803 to 1815 the second part of the French War was waging. The chief points to be noticed are:—

1. The termination of Napoleon's hopes for an invasion of England, by the destruction of the French and Spanish fleets at Trafalgar.
2. The capture of the Cape of Good Hope.
3. The Berlin Decrees and the corresponding "Orders in Council."
4. The Peninsular War—
   1808. Joseph Bonaparte King of Spain. Expeditions under Sir John Moore and Sir A. Wellesley. Battles of Rolica and Vimiera, and the Convention of Cintra. Moore attacks Napoleon's flank, and prevents him from marching south.
   1809. Battles of Corunna and Talavera.
   1810. Battle of Busaco, and retreat to the lines of Torres Vedras.
   1811. Battles of Barrosa, Fuentes d'Onoro, and Albuera.
   1812. Storming of Ciudad Rodrigo and Badajos. Victory of Salamanca.
   1813. Battles of the Pyrenees, Nivelle, Nive, and St. Pierre. Storming of San Sebastian.
   1814. Victories of Orthes and Toulouse.
5. 1815. The Hundred Days, and Battle of Waterloo. Prepare a plan.
6. War between Britain and the United States.
7. Severe depression after the war. Note the enormous cost—over £600,000,000.

George IV.—1. Cato Street Conspiracy.
2. Commercial panic.
3. Battle of Navarino.

3. Geography.

Sketch-maps must be continually used. See that you can answer the following:—

Candidates.—1. Why is the west coast of Ireland more indented than the east?
2. Give an account of the islands of Ireland.
3. What do you know of the climate of Ireland? What are bogs? how are they formed? Why is Ireland called the Emerald Isle?
4. What do you know of the fisheries of Ireland?

First Year.—1. Describe the mountain system of India. Why is India so called?
2. Give some account of the rivers. Why do they periodically rise?
3. Say what you can of the seasons. What are monsoons? how are they caused?
4. Why are irrigation works necessary?
5. What productions have increased largely under British rule, and why?
6. Contrast the Eastern and Western Ghauts.
7. What do you know of the Terai, Carnatic, Sunderbunds, Deccan, Great Indian Desert, Runn of Kutch, Elephanta?

Second Year.—1. Describe the general arrangements of the mountains of Australia.
2. Why is the interior dry? What is a creek? What is a "brick-duster"?
3. What do you know of the *native* fauna and flora (not things which have been introduced)?
4. Compare the vegetable productions of Queensland and Tasmania.

4. Arithmetic.

The metric system is very easy if a little thought is given to it. Those who work through the chapters in "Christian and Collar" need not fear any question at the examination. Should students find difficulties, they should write for assistance.

Test Questions.

1. *Penmanship.*
   Large Hand:—*Energetically.*
   Small Hand:—*How small, of all that human hearts endure,*
   The part which laws or kings can cause or cure.
2. *English.—Candidates.*
Analyse, and parse the words in italics:—
   (*a*) "Ask me not *what* the maiden feels,
   Left in that dreadful hour *alone.*"
   (*b*) "And *such* a yell was *there*,
   As if men fought upon the earth,
   And fiends in *upper* air."

First Year.
   (*a*) Paraphrase lines 349–360.
   (*b*) Analyse, and parse words in italics:—
   "*Yet* think not, *thus when* freedom's ills I state,
   I mean *to flatter* kings or court the *great.*
   Ye powers of truth that bid my soul *aspire*,
   Far from my bosom *drive* the low desire."
   (*c*) Write a character of the Dutch as depicted by Goldsmith.

Second Year.
   (*a*) Paraphrase Act iv., Scene 3, lines 210–222,—
   "You must note beside.....
   .....or lose our ventures."
   (*b*) Analyse the same passage.
   (*c*) Parse:—"I have as much of this in art as you,
   But yet my nature could not bear it so."

3. *History.*
Candidates.—Say what you can of the causes and results of the War of the Spanish Succession.
First Year.—By what means did Henry the Seventh amass money? What was his object in so doing?
Second Year.—Explain clearly the causes which led to the loss of the American colonies.
4. *Geography.*
Candidates.—Mention ten manufacturing towns in Scotland. Describe their position, and add something about their manufactures.
First Year.—Say what you can of Afghanistan under these heads:—(*a*) People and Industries; (*b*) Government; (*c*) Political importance.
Second Year.—What do you know of the Llanos, Selvas, Pampas, El Gran Chaco, Titicaca, Aconcagua, Valparaiso, and La Plata?
5. *Arithmetic.*

Test Paper in Profit and Loss.

1. I buy an article at 6s. 5d. per cwt., and on every ton I gain £1, 13s. 4d. What is the gain per cent.? Ans. $18\frac{3}{11}$.

2. Goods are bought at 8 guineas per cwt.; one-seventh is wasted, and they are retailed at 2s. per lb. What is the gain per cent.? Ans. $14\frac{2}{7}$.

3. If 7 per cent. is lost by selling goods for £145, 6s. 3d., what would be gained per cent. by selling them for £168, 15s.? Ans. 8 per cent.

4. A grocer mixes a number of pounds of tea at 2s. a lb. with an equal quantity of tea at 3s. 4d. a pound, and sells the whole amount for £12, thereby gaining $6\frac{1}{4}$ per cent. Of how many lbs. did the mixture consist? Ans. $84\frac{4}{9}$.

5. A draper's stock is worth at cost price £1803, 14s. 8d. After disposing of $\frac{3}{5}$ of it at a profit of $12\frac{1}{2}$ per cent., he determines to sell off and retire. At what percentage below cost price may he sell the remainder so as just to suffer no loss? Ans. 37½.

6. A milk-dealer buys pure milk at $11\frac{1}{2}$d. per gallon. How much water must he add to enable him to sell it at 5d. per quart and obtain a gross profit of 100 per cent.? Ans. 15 per cent.

SCHOLARSHIP EXAMINATION, 1901.

Seventh Month.

Work to be Prepared.

1. *Reading and Repetition.*—Ten minutes' daily practice.
2. *Penmanship.*—Regular practice from *The Practical Teacher Copy Book.*
3. *Theory of Teaching.*—Chap. vii., *Scholarship School Management.*
4. *Geography.*
   (1.) The remaining British possessions in Africa.
   (2.) Revise Africa generally. The Barbary States, Abyssinia, and the Soudan.
5. *English.*
   (1.) The rules of punctuation.
   (2.) Twenty-five roots and meanings each week.
   (3.) Literature, 1700 to 1750.
   (4.) *Julius Cæsar*, Act iii., Scene 3; and Act iv., Scenes 1 and 2.
6. *History.*—Charles II. to Anne.
7. *Composition.*—One or two essays each week, on such subjects as:—The Character of the Stuarts; Japan; "There is a tide in the affairs of men which, taken at the flood, leads on to fortune;" A criticism of some book recently read; Forests, and their Uses; Fairy Tales; Tragedy and Comedy; The Value of the Study of History.
8. *Arithmetic.*—Simple interest, discount, compound interest.
9. *Algebra.*—Indices; chap. xxx., Hall and Knight.
10. *Euclid.*—Revise Book I., Props. 21–30, and ten deductions per week.
11. *Elementary Science.*—Elementary chemistry. Elementary properties of chlorine, sulphur, phosphorus, marsh gas and coal gas.
12. *Languages.*
   Latin—Pars. ix. and x. of *Life of Epaminondas.*
   French—Four chapters from *Le Roi des Montagnes.*
13. *Drawing.*—A freehand copy each week.
14. *Music.*—Chap. vii., *School Music Teacher.*
15. *Domestic Economy.*—Household management. Savings and investment.

Notes on the Work for the Month.

1. *Geography.*—The following is a tabular summary of the chief points of the minor African possessions:—

Colony.	Area (sq. miles).	Population.	Productions.	Towns.	Government.
Rhodesia.	750,000.	700,000.	Gold, copper, rubber; capable of producing every warm temperate vegetable.	Salisbury, Buluwayo, Umtali, Gwelo.	British South Africa Company.
Gambia.	69.	15,000.	Ground nuts, beeswax, rubber, hides, rice, cotton, maize.	Bathurst.	Crown Col.

Colony.	Area (sq. miles).	Population.	Productions.	Towns.	Gov'rnment.
Gold Coast Colony.	40,000.	1,500,000.	Gold, rubber, ivory, gum copal, monkey skins, cotton, oil, ginger, beeswax, palm-oil.	Accra, Cape Coast, Elmina, Addah.	Crown Col.
Sierra Leone.	4,000.	136,000.		Freetown.	Crown Col.
Sierra Leone Protectorate.	30,000.	500,000.		..	Protectorate.
Lagos.	1,500.	2,000,000.	The imports consist mainly of hardware, clothing, tobacco, gunpowder, ales and spirits, salt and sugar.	Lagos.	Crown Col.
Protectorate of Southern Nigeria.	700,000.	..		Old Calabar, Bonny, Brass Benin.	Protectorate.
Northern Nigeria.	310,000.	40,000,000.		..	Protectorate.
Somaliland.	90,000.	250,000.	..	Berbera.	Protectorate.
East African Protectorate.	1,120,000.	6,500,000.	Ivory, rubber, grain, gums, ebony, etc.	Mombasa.	Protectorate.
Witu Protectorate.				..	Protectorate.
Uganda Protectorate.				Kampala.	Protectorate.
Zanzibar Protectorate.	985.	165,000.	Ivory, cloves, copra, rubber, gum copal.	Zanzibar.	Protectorate.
British Central Africa Protectorate (Nyassaland).	42,200.	900,000.	Coffee, ivory, rubber and tobacco, rice, cotton, tea.	Blantyre and Zomba.	Protectorate.
Mauritius.	705.	380,000.	Sugar.	Port Louis.	Crown Col.

An account should be prepared of the Cape to Cairo Railway—3 feet 6 inch gauge—at present constructed from Cairo to Khartoum in the north, and from Cape Town to Buluwayo in the south.

The term "Protectorate" must be understood. It implies that the country is ceded to England by international agreement, and that no other nation may occupy it; but it does not mean that it is actually ruled and administered by England. Many parts are as yet not explored.

2. *History.*—The following questions from examination papers give some idea of the chief points to be prepared :—

(1.) By what marriages were the Stuarts connected with Continental families? Show the historical importance of these marriages.

(2.) In what ways did James the Second act unconstitutionally? What safeguards against like action on the part of the sovereign were provided on the accession of William and Mary? What further conditions were laid down before the accession of the House of Hanover? (For the latter part see Bill of Rights and Acts of Succession.)

(3.) Name the chief events in the reign of Charles the Second, and give the character of that king.

(4.) State shortly the main objects of the foreign policy of William the Third.

(5.) Why may the accession of William the Third be said to begin a fresh period in English history?

(6.) Compare some of the social conditions of England under William the Third with those of the present day.

(7.) How was the union of England and Scotland accomplished? What were the chief provisions of the Act effecting it?

(8.) Describe, with a plan, the battle of Blenheim, and point out its political importance.

(9.) What do you know of Titus Oates, Dr. Sacheverell, Clarendon, Duke of Marlborough?

(10.) State very briefly the provisions of the Test Act, Habeas Corpus Act, Triennial Act, Toleration Act.

(11.) Give an account of William the Third's reduction of Ireland.

(12.) How do you account for the fact that Monmouth failed where William of Orange succeeded, when both had practically the same aim?

Particular attention should be paid to the Revolution, and to the alterations and new political principles that arose from it. These are given in the Bill of Rights and Acts of Succession, and, in addition, by the Act of Toleration. Triennial Bill; the custom of government by party and by Cabinet; appropriation of supplies, etc.

3. *Arithmetic.*—Simple Interest sums must be worked by method of unity, and not by formula. It must be remembered that solutions must be such as would explain themselves to a class. Working by a formula is, for a child, working blindly. Compound interest should be worked by fractions—for example, 5 %, 4 %, 3 %, etc., = $\frac{1}{20}$, $\frac{1}{25}$, $\frac{1}{33\frac{1}{3}}$, etc., of the principal. The sum should, if possible, be worked in decimals. For example: Find the compound interest on £1200 for three years at 4 per cent.

Principal	= £1200
First year's interest = $\frac{1}{25}$ of £1200	= 48
Second year's principal	= £1248
" " interest = $\frac{1}{25}$ of £1248	= 49·92
Third year's principal	= £1297·92
" " interest = $\frac{1}{25}$ of £1297·92	= 51·9168
Amount	= £1349·8368
Interest	= 149·8368
	or £149, 16s. 8·832d.

This method is perfectly clear and self-explanatory.

4. *Algebra.*—The theory of indices is very important. Proofs of the following statements must be prepared :—

(1.) $a^m \times a^n = a^{m+n}$, where m and n stand for positive integers.
(2.) $a^m \div a^n = a^{m-n}$, " " " " "
(3.) $(a^m)^n = a^{mn}$, " " " " "
(4.) $a^0 = 1$.
(5.) $a^{-n} = \frac{1}{a^n}$.

5. *Domestic Economy.*—The following questions will be a guide to the reading:—

(1.) Supposing a mistress with a salary of £80 to save £15, what available channels are there for investment, and which would you prefer?

(2.) Why do the salaries of teachers often differ in town and country, or in different neighbourhoods?

(3.) Say what is meant by a benefit society, what sort of rules it enforces, and what are the advantages and risks connected with them.

(4.) Explain what is meant by consols, deferred annuities, provident dispensaries, and life insurance, and give any particulars you know respecting one of them.

(5.) Describe the best forms of thrift (*a*) to be recommended in lessons to school children, (*b*) to be adopted by the teacher herself. Give reasons for your answers.

(6.) How would a sum of £20 be most properly expended in furnishing a labourer's cottage containing three rooms?

(7.) What rate of interest is allowed by the Post Office Savings Bank? Compute the sum which (including interest) would be saved in three years by a person who regularly placed 2s. a week in the Post Office Savings Bank.

(8.) Define "immediate annuities" and "deferred annuities," and state as nearly as you can the value of an immediate annuity which a woman 50 years of age can purchase with £100.

(9.) Three sisters, aged 25, 18, 16, have to live on a joint income of £150 a year. For what purposes, and in what amounts, would the money be best used?

(10.) "Neither a borrower nor a lender be." Discuss the question whether, in any circumstances, it would be prudent to depart from these rules.

(11.) Write notes of a lesson on Co-operative Stores.

(12.) In what way may a school penny bank be best founded and conducted?

Test Questions.

(Answers to these questions are marked and criticised at a nominal charge.)

1. *Penmanship.*
   Large Hand :—*Episcopalian.*
   Small Hand :—*Tears, idle tears, I know not what they mean.*
2. Point out the uses of teaching grammar in schools. Would any other subject serve the same purposes equally well?
3. Write an essay on the causes of the present war.
4. Name the chief productions of the East Indian Archipelago.
5. What do you know of the writers of the reign of Elizabeth?
6. Paraphrase the following passage :—

"I am *no* orator, *as* Brutus is;
But, as you know me *all*, a plain blunt man,
That love my friend; and that they know *full* well
That gave me public leave *to speak* of him:
For I have *neither* wit, nor words, nor worth,
Action, nor utterance, nor the power of speech,
To stir men's blood: I only speak *right on;*
Show you sweet Cæsar's wounds, poor, poor dumb mouths,
And bid them *speak* for me."

7. Analyse the above, and parse the words in italics.
8. Trace the changes in the form of government between 1642 and 1660.
9. Say what you can of the state of religious parties in the reigns of James the First and Charles the First.
10. What do you understand by "magnetic elements"? Two bar magnets lie parallel at a distance of two inches from each other, their north poles being in the same direction. Draw a diagram showing the lines of force.
11. (*a*) Name the following intervals :—

m–r', m–d', s–le, d–ma, m–se, r–fe.

(*b*) Rewrite the following passages, making a change by bridge notes at (*a*), and a return to the original key at (*b*) :—

(*a*) (*b*)
m s f l m fe l s d' m l fe r s m d

(*a*) (*b*)
m s d' s l ta le m' r' ta s m f l s d' r' d'

(*c*) Write the minor scale in its three forms.

12. Describe some common customs with regard to women's and children's attire which are contrary to the fundamental laws of health.

CORRESPONDENCE: RULES.

To ensure an answer in the next issue, queries must be sent by the 15th of each month.

Name and address of sender, with coupon of current number of THE PRACTICAL TEACHER (and *nom de plume* if desired), must be enclosed.

As a rule, all replies will appear in the Correspondence Column; but any one desiring an immediate reply may obtain it by enclosing a stamped addressed envelope.

All communications and queries with regard to the PUPIL TEACHERS' AND SCHOLARSHIP COURSE should be addressed to "Mr. A. T. FLUX, The Bays, Belvedere, Kent."

ANSWERS TO CORRESPONDENTS.

Jessica.—Essay, 18/20. Very good; some of the sentences need rearrangement and pruning. I could point out errors more fully if you had your work returned.

(Other Correspondents answered by post.)

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OUR CERTIFICATE COURSE FOR 1902.

BY GEORGE COLLAR, B.A., B.SC.,

Head-Master of the Stockwell Pupil Teachers' School.

AS the Certificate Examination this year begins on 1st July, we brought our course to a conclusion in the June number, and only refer to this course for the purpose of conveying our heartiest wishes for success to all who have followed the course in THE PRACTICAL TEACHER. As the acting teachers' list refers only to the schools in which the candidates are engaged, we have no means of becoming acquainted with our readers' successes unless they send word. We need hardly say, therefore, how delighted we shall be to receive post-cards from our readers, just to inform us of their success.

But, "The king is dead; long live the king;" and no sooner is one Certificate Course finished than we have to prepare for another.

For the first time our course has no reference to first year work, for the simple reason that the last First Year Examination will be held in 1901. As we explained last month, the examination to be held in 1902 will be open to those only who have previously passed in first year papers. After that there will be but one examination; and although the syllabus for 1903 is not yet issued, we may fairly assume that the preparation of the work set will require two years of study for those who start from Scholarship standard. Many of our readers may consider that the abolition of the First Year Examination is not an unmixed blessing, and there is no doubt that to the private student an intermediate examination affords a healthy stimulus and a means of gauging one's fitness for the final test. We propose, therefore, to arrange in connection with our future courses not only monthly tests, but also a full examination covering half the work set. We are unable to give details in this month's issue, as the syllabus for 1903 is not yet issued; but next month we hope to give a scheme of work, with particulars of the conditions of entrance for this examination, and of the prizes we can offer; and in the meantime we shall be pleased to receive from our readers suggestions for making the course as helpful as possible to them in their preparation.

This month, therefore, we shall devote all our space to the assistance of those who will take second year papers in 1902.

READING.—The importance of good reading is shown by the high marks which may be obtained in this subject. Much time should, therefore, be spent in practice. The first condition of good reading is the power of grasping the author's meaning; the second is the power of adequately conveying that meaning to others. The path of the candidate is made as easy as possible by affording him an opportunity of previous study of the books from which he will read. Two books must be prepared by the candidate, who must obtain the inspector's previous approval of them; and as the syllabus says that "one of the approved books may be that prescribed for general reading under English language and literature in Part II.," our readers are advised to select Stanley's *Life of Arnold* as one of the two. For the other we should recommend one of Thackeray's works, and should advise the student to procure Nelson's beautiful edition (New Century Library), which is printed on India paper, and is small enough to go in the pocket, although the type is large and clear.

REPETITION.—The requirements are "at least 200 lines from a play of Shakespeare," and our readers will naturally select *Macbeth*, as that is the play set down in the English literature course. The lines need not be consecutive, and the best plan is to learn selections from different parts of the play, and in that way more suitable lines for recitation will be prepared than if a passage of 200 odd lines be taken from one part. In this way, also, passages may be committed to memory which illustrate the development of the play and the characteristics of the chief *dramatis personæ*. We should like to call special attention to the distinction between "students" and "acting teachers," as it is of importance in reading the requirements in "repetition from memory," as well as in other parts of the syllabus. In the syllabus the term "students" means students in training colleges, and "acting teachers" means those candidates who are preparing for their certificate while still working as teachers in elementary schools. "Students who select French or German in Part II. *must* offer 70 lines of French or German recitation." Acting teachers, however, are not debarred from taking a language in Part II. because they are diffident about reciting in French or German, although they may, if they like, present "70 lines from some standard author in Latin, Greek, French, German, or Welsh." Most of our readers are "acting teachers," and they should note that the paragraph on "repetition" does not interfere with their option of taking one or two languages, although we strongly advise them to commit passages of French or German to memory if they have the living voice of a teacher to guide them in the matter of pronunciation.

THEORY OF TEACHING.—This subject has been removed from the first year's syllabus, but we trust that our readers have not neglected it whilst working through the first year's course, as there is a great deal to be done in this subject. The text-books we recommend are: *School Management and Methods of Instruction*, Collar and Crook (Macmillan, 3s. 6d.); *Psychology in the Schoolroom*, Dexter and Garlick (Longmans, 4s. 6d.); Welton's *Logical Basis of Education* (Macmillan, 3s. 6d.), or Jevons's *Lessons in Logic* (Macmillan, 3s. 6d.); and MacCunn's *Making of Character* (Cambridge Press, 2s. 6d.). If these four books are thoroughly mastered, there will be nothing to fear as regards the first paragraph of this section of the syllabus. Cartwright's *Mental Science* (Nelson, 2s. 6d.) will be found very useful for revision purposes. The student is also advised to read some of the classical or larger works on education, such as Spencer's *Education*, Bain's *Education as a Science*, Quick's *Educational Reformers*, Fitch's *Lectures on Teaching*, Barnett's *Teaching and Organisation* and *Common Sense in Education*, James's *Psychology*, Lange's *Apperception*.

For the special study, one of the following works must be prepared: Plato's *Republic*, Book II., chap. xi. to end of Book IV.; or Herford's *Student's Froebel*, Part I. (omitting the introduction); or Locke's *Thoughts on Education*. To students taking the first, we recommend either the "Golden Treasury" edition or the "Walter Scott" edition. The English edition of the second is published by Isbister, while the last has been edited by Sir J. G. Fitch (Cambridge Press), and by Canon Daniel (National Society Depository). We shall this year deal with Locke in our notes.

PRACTICAL TEACHING.—Acting teachers must be sure to arrange with their inspector to hear them teach.

COMPOSITION.—This is a subject in which many acting teachers deceive themselves. Careful study is necessary in order to acquire a good style of composition. Meiklejohn's *Art of Writing English* (Holden) and Nichol's *Primer of English Composition* (Macmillan) should be carefully studied. We shall suggest subjects every month, but suitable material for practice will be found in *Short Essays* (Moffatt and Paige), and in Meiklejohn's *Hundred Short Essays in Outline*.

DRAWING.—Credit is given for *one* of the drawing subjects recognised for an Elementary Drawing Certificate. The candidate must pass in this subject in May 1902, and may attempt two or more subjects, thus allowing for possible failure in one; but marks will be allowed in one subject only, and that subject must not have been credited with marks at the First Year Examination. We cannot provide for this subject in our monthly papers, but would recommend all candidates to join classes, and to take in *The Practical Teacher's Art Monthly*.

THEORY OF MUSIC.—This is a subject which makes a good return for the time spent on it. The text-books recommended are: Dunstan's *Manual of Music* (Curwen), for both notations; Rodger's *Tonic Sol-fa Theory* (Curwen), and Maskell Hardy's *How to Train Children's Voices* (Curwen), for those taking either notation. Although in the Certificate Examination marks are obtainable for only one notation, we should advise all teachers to make themselves familiar with both.

NEEDLEWORK.—Women candidates should notice carefully the requirements in this subject. They are more explicitly stated in this year's syllabus than in former ones.

In Part II., Group A, English Language and Literature is compulsory for both men and women. The student is required to make an "exact and detailed study of Shakespeare's *Macbeth*, and Milton's *Paradise Lost*, Books I. and II." There are several good annotated editions of *Macbeth*, among which we may recommend those of Macmillan, the Clarendon Press, Arnold, and Moffatt and Paige. The same houses publish editions of *Paradise Lost*, Books I. and II. We should advise all our readers to procure the complete poetical works of Milton in the "Globe" edition. They are edited by Professor Masson, one of the highest authorities on Milton.

The book set for general reading, Stanley's *Life of Arnold*, is published by Ward, Lock, and Co. at 2s.

The other compulsory group is Group C, which for women includes arithmetic, algebra, geometry, and domestic economy. Two of these subjects must be taken, but arithmetic and algebra cannot be taken together. We should advise our lady friends to take arithmetic and geometry. We should have preferred to see the arithmetic paper contain some questions in algebra, as

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we consider that algebra forms a splendid supplement to arithmetic, although we cannot recommend it as a substitute. Those of our readers who have had a really thorough training in the theory and practice of arithmetic might, however, take the section in algebra, which is of only a very elementary character.

DOMESTIC ECONOMY is a very unsatisfactory subject, inasmuch as it requires the application of rather advanced parts of science by those who are often ignorant of the simplest principles. Those who have made a study of chemistry and physics, and prefer this subject to a mathematical one, should provide themselves with Nelson's *Domestic Economy*.

For candidates taking ARITHMETIC, *A New Arithmetic*, by Christian and Collar (Holden), is especially recommended, on account of its full treatment of principles and theory, of modern methods of working, and of illustrations and methods of teaching.

For ALGEBRA, either Hall and Knight's *Elementary Algebra* (Macmillan, 4s. 6d., with answers) or C. Smith's *Elementary Algebra* (Macmillan) will prove a most useful text-book.

For GEOMETRY we should recommend Hall and Stevens's *Euclid* (Macmillan), Books I.–IV.

For men candidates, Group C contains ALGEBRA, covering the same ground as the old first year course in this subject, but with questions of a somewhat more advanced type, and *either* some of the more advanced parts of algebra—that is, permutations, combinations, binomial theorem (positive integral indices only), logarithms, interest, and scales of notation—*or* some of the elementary parts of TRIGONOMETRY. We shall give our space to help those who are taking up the latter section, but shall be glad to help those who are taking the other course if they will kindly send up their difficulties. The algebra students should follow Hall and Knight's *Higher Algebra*, and the others are advised to get Lock's *Elementary Trigonometry* (Macmillan).

Many of our readers will be tempted to take Group B, GEOGRAPHY AND HISTORY. The former course is straightforward enough, and many good text-books deal with it. Of these we may mention Brook's *Geography* (Nelson and Sons), Longmans's *Geography*, Gill's *Student's Geography*, and Meiklejohn's *Comparative Geography* (Holden), and the handy volumes on *Europe* and the *British Empire* in Meiklejohn's series.

The course in history may prove deceptive. It seems very simple to say the "history of modern Europe *in outline* from 1814 to 1848," and "a *detailed* knowledge will not be required;" but who is to decide what are "outlines," and where are we to draw the line between detailed knowledge and non-detailed knowledge? Of course a knowledge void of all detail is valueless, but the syllabus gives no hint as to which details may be omitted and which may not. Again, there is a great dearth of text-books dealing with this work. Chapters xvi. and xvii. of Freeman's *General Sketch of European History* contain an "outline" of this period, but the student will have to supplement this by the corresponding sections of the books on *France*, *Italy*, and *Germany* in the same series. We do not know a handy book on the expansion of modern Russia. It seems, however, difficult to keep to "outlines," and to avoid standard works which are very expensive.

The statement that "more advanced questions in geography and history will be set for second year candidates than for first year candidates" was evidently copied from last year's syllabus before it was decided not to admit any "first year candidates" in 1902.

After a long course of history and geography as pupil teachers, and as candidates for the First Year Certificate Examination, our readers will no doubt feel glad of a change, and we should advise them to give up Group B in favour of D, E, or F.

Students within reach of good science classes are advised to take up two subjects of science. One of these must be physiography in the case of every candidate who has not passed in that subject at the May examinations. Those who have so passed may select their subjects from the list in the syllabus, p. 11, but can obtain no credit for the same or a lower stage of a subject for which they obtained marks at their First Year Examination. For these purposes the mark "P" on the Scholarship List is equivalent to an elementary pass in physiography.

Candidates within reach of good laboratory teaching are strongly advised to take *Xt* and *Xp*, which count as one subject, but gain 50 per cent. more marks than any other one.

One great advantage derived from taking science subjects is that they can be cleared out of the way at the May examination. This leaves the student a smaller number of subjects to work at in the last month or two.

Some of our readers will be more favourably situated for getting help in languages; they should try Group D. It should be noticed that the last two paragraphs in this section refer to *students in training colleges only*. Acting teachers are not required to submit to an oral test in French. Hence, although we strongly advocate the acquisition of a language orally, yet a visual command is recognised as enough for examination purposes, and every one of our readers can acquire this.

For LATIN we recommend Macmillan's Latin Course, or the *Via Latina* or Smith's *Principia*. Those preferring a Latin grammar pure and simple will find the *Tutorial Latin Grammar* (Clive) a very useful one. Editions of Horace are numerous. We should advise our readers to get *Horace, Book I.*, in Macmillan's Elementary Classics, and Cicero, *Pro Archia* (Clive).

FRENCH.—Fasnacht's *Synthetic French Grammar* is recommended for the grammatical part of the work. As no set books are named, plenty of practice is necessary in order to acquire (*a*) facility in reading at sight, and (*b*) skill and accuracy in translating into French. The last two books set were *Le Voyage autour de ma Chambre* and *Le Roi des Montagnes*. These should be carefully studied, as affording practice in the style of French required. THE PRACTICAL TEACHER editions (Nelson) should be used, as they contain useful exercises for translation into French, based on the text. All of our readers who are taking French should attempt the monthly competition in THE PRACTICAL TEACHER. This will afford very useful practice.

Group F provides a combination of subjects suitable for those whose opportunities would limit them to one language or one science subject. It permits them to take two of the following subjects: (1) A language (one set in Group D), (2) a subject of science (from Group E), and (3) political economy.

As our space is limited, we think we can do the greatest good to the greatest number by taking up French, Latin, and political economy. As a text-book in the latter subject we recommend Mrs. Fawcett's *Political Economy for Beginners* (Macmillan, 2s. 6d.).

NOTES AND SYLLABUS FOR JULY.

ENGLISH COMPOSITION.

Prepare essays on the following:—

1. Horse-racing.
2. What constitutes a "musical people"?
3. Description of a shipwreck.

THEORY OF TEACHING.

Definitions of education, its aims and processes.

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"The object of education is the development in the individual of all the perfection of which he is capable."—*Kant.*

Of all that is comprehended under the term "education," a part only can be dealt with in school and by the teacher; the responsibility for the rest lies with the home, and too often the street. The school education should take into account the child's other environments, and endeavour to fit him to derive a maximum of benefit and a minimum of ill from them. Consider the ideal conditions and the harmonious working of school and home.

Study the question of school buildings and equipment, particularly the rules at the end of the Code which set out the minimum requirements for a school that the Board of Education will recognise as efficient.

Be prepared to deal with questions on desks and other furniture—their best dimensions, and the advantages and disadvantages of the leading types, as single, dual, continuous, and convertible desks; the nature and use of different pieces of apparatus—abacus, blackboards, easels, writing material, maps, and globes.

Psychology.—Study the general characters of the nervous system from such a book as Huxley's *Physiology*. Chap. xi., paragraphs 18–21 and 26, may be omitted. The general nature of reflex actions as compared with automatic actions needs careful study, although the student will find as he proceeds that the difference is really one of degree rather than one of kind. Parts of chap. viii. should be studied, the most important paragraphs being 1–11, 15, 18–30; and chapters ix. and x. should be read through, and the general structure and action of the eye thoroughly mastered.

ARITHMETIC (WOMEN).

Revise the fundamental parts—nature of units and numbers, and of the operations of addition, subtraction, multiplication, and division. The most important thing in the study of this section is to clearly understand the principles on which subtraction has to be taught. Remember that the term "borrowing" should never be used, for a moment's consideration of what is meant by "borrowing" will show that nothing resembling it takes place in working subtraction sums. The best plan is to teach subtraction as "complementary addition." The methods

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of "equal additions" and "decomposition" are mathematically correct, but the principles which underlie them are not easily grasped by young children, and unless the principles are grasped the educational value is lost.

Students who are not familiar with the "Italian method" of long division should at once study and adopt it both in their own work and with their classes.

The principles underlying the compound rules are the same as those underlying the simple rules, but reduction comes into the former. The comparative merits of memorised tables and facility in reduction are points upon which teachers are not agreed, but our readers should consider the *pros* and *cons*.

English Language and Literature.

Prepare life of Shakespeare, and read an account of pre-Shakespearian drama in Stopford Brooke's *Primer of English Literature*, or a larger book on the history of English literature.

The biographical details are not of so much importance as the characteristics of Shakespeare's literary genius. That which stamps Shakespeare as one of the world's greatest poets is not so much the amount and correctness of his writings as (1) his wonderful insight into the working of the human mind; (2) the remarkable range of his characters—no two are alike, even though their circumstances may be similar; and (3) the dramatic yet natural way in which the characters are developed. Not only are the characters different one from the other, but we generally find an evolution of character going on as the play proceeds, so that a character is somewhat different in the fifth act from what it was in the first, and in this alteration there is a change which is not only natural, but full of dramatic interest. In this respect Shakespeare offers a strong contrast with Molière, one of the world's greatest painters of character. Molière's method was to accentuate and exaggerate the character he was dealing with. Harpagon was an ideal miser, Tartuffe an ideal hypocrite. But such as the character is at the opening of the play, such he is at the close. Harpagon cannot be more avaricious than he is at the beginning; and the events of the play teach him no lesson, for the last words of the play are his declaration that he will go "to see his dear hidden treasure." So Tartuffe's first words are a hypocritical call to his valet—

> "Laurent, serrez ma haire avec ma discipline,
> Et priez que toujours le ciel vous illumine."

And although his imposture is unmasked, he remains a hypocrite to the end. In this respect we see Shakespeare's great superiority, and it is a point that our readers will have a splendid opportunity of studying in *Macbeth*; for we shall see a man whom we cannot help admiring in the first act (although even then he is under the baneful influence of ambition), led by ambition through favouring circumstances to the commission of crime upon crime, till we feel a relief when his end comes, in spite of our admiration for his determined courage, and for that "milk of human kindness" which—and not fear—makes him desire to avoid Macduff.

"*Macbeth* and *Lear*, *Othello* and *Hamlet*, are usually reckoned Shakespeare's four principal tragedies. *Lear* stands first for profound intensity of passion, *Macbeth* for the wildness of the imagination and the rapidity of the action, *Othello* for the progressive interest and powerful alternations of feeling, *Hamlet* for the refined development of thought and sentiment."—*Hazlitt*.

Read the whole play through once or twice, in order to gain a general idea of the movement of the plot.

Geometry.

Women.—Our readers have finished the first book of Euclid's elements, and have acquired a familiarity with the structure of a proposition. The second book should present no difficulty to those who know the first book well, provided they recognise the two methods of describing a figure: we may either see the figure already drawn, and name it by its boundaries, or we may refer to it as a function of one or more straight lines; thus we may speak of the figure ABCD, or may call the same figure the square on AB. Most of the propositions are proved by stating that a certain figure is equal to the sum of the parts which make it up, and then showing that these figures may be called by other names. Try to follow out this idea in preparing the definitions and first four propositions of Book II.

Men.—*Euclid.*—The propositions in Book IV. are really easy though long. The only one in the book which is at all difficult is Prop. 10, which we will analyse and explain next month.

Prepare IV. 1-9, with exercises.

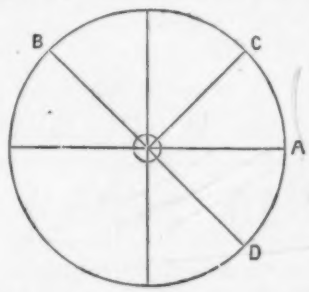
Trigonometry: Definition and Measurement of an Angle.—The definition of an angle given by Euclid, and his use of the term, have certain limitations which are soon found to be inconvenient when we come to perform operations with or on angles. Thus by Euclid's definition there can be no such thing as an angle equal to two right angles, for the case in which the two straight lines are "in one and the same straight line" is expressly excluded; and although an angle greater than two right angles is not excluded from the definition, yet in practice Euclid never speaks of two straight lines as containing such an angle, but calls the defect of this angle from four right angles the angle contained by the two straight lines. But if we add like quantities together, the result must be a quantity of the same kind; hence the sum of two or more angles must be itself an angle. Thus we see that there is no limit to the magnitude of an angle, and we must modify our conception of an angle accordingly.

We may define an angle as the opening between two straight lines which have a common point, and the magnitude is measured by the distance that one of the lines would have to be turned round the common point from the position of coincidence in order to take up the assigned position, the other being supposed fixed.

This will enable us to perform many arithmetical and algebraical operations on angles which would otherwise be impossible. Thus we can add together any number of angles, or take a given angle any assigned number of times—that is, multiply an angle by a number. Similarly, we may subtract one angle from another, or divide a given angle into an assigned number of parts.

The subtraction of a quantity from one greater than itself is a simple arithmetical operation, but the subtraction of a quantity from one less than itself is an algebraical one, giving a negative result, and leads us to consider the meaning of "negative angle."

Now if, in the figure, AOB represent 1½ right angles, and we subtract the right angle COB from it, we shall have left the



angle AOC, which is half a right angle. But if we subtract the right angle COD from the half right angle AOC, the boundary will come down to OD—that is, the angle will equal half a right angle in magnitude. But of the two lines containing it the movable line OD will be below the fixed one OA, and it will seem to have been formed by moving the line OD in a *clockwise* direction, while the angles to which we have applied the positive sign have been formed by turning the movable line in a *contra-clockwise* direction. This justifies us in using the negative sign for angles.

Measurement of Angles.—In order to measure any quantity we must fix upon a standard. In measuring angles we have two standards—one the right angle, a quantity fixed by Euclid, def. 10, and the other an angle subtended at the centre of a circle by an arc whose length is equal to the radius of the circle. The latter unit is called a **radian**. The right angle is generally subdivided into ninety parts, called degrees; and these again into sixty parts, called minutes; which are subdivided into sixtieths, called seconds. From the fact that in two cases the units are divided into sixtieths, this system is called the sexagesimal system. Another system was once devised in which the right angle was divided into hundredths, called grades; a grade was divided into hundredths, called (French) minutes, and these into hundredths, called (French) seconds. This is called the centesimal system, but it is never used except in the early paragraphs of trigonometry books, where it affords exercises for beginners.

French.

Grammar of the noun and article. *Le Roi des Montagnes*, pp. 1-30, and Exercises 1-3.

Political Economy.

Fawcett, pp. 1-38. Make an analysis, and think out answers to the test questions.

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RULES.

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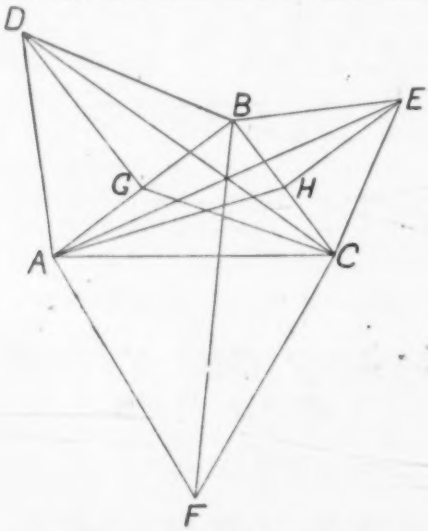
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

The Editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

W. E. Davies.—1. You are prohibited from taking Stages 3 and 4 in the same year. You may take two stages in mathematics, but one must be from Group I. (that is, Stages 1, 2, 3, 4) and the other from Group II. (that is, Stages 5, 6, 7). 2. Wilson's *Conic Sections* is a useful book for Stage 4. It only covers a portion of the work, however. For advanced theoretical mechanics, Loney's *Statics and Dynamics*, also Pinkerton's *Hydrostatics and Pneumatics*. For Stage 5 Mathematics, Loney's *Co-ordinate Geometry*, Edwards's *Differential and Integral Calculus* (two small volumes). We do not know of a suitable book for the descriptive geometry portion. We do not know of the existence of a book arranged for advanced practical mathematics. Harrison and Baxandall's Part II. will do for practical plane and solid geometry (advanced). Poyser's advanced book is suitable for magnetism and electricity.

F. S. Long.—In any right-angled triangle the equilateral triangle described on the hypotenuse is equal to the sum of the equilateral triangles on the other two sides. (Deakin's *Euclid.*)



ABC is the right-angled triangle; FAC, DBA, and ECB are the equilateral triangles on the hypotenuse and two sides respectively.

Join DC, BF, EA.

Draw DG, EH perpendicular to AB, BC respectively.

Join GC, AH.

The triangles DAC, BAF are equal, as they have two sides DA, AC and the included angle DAC in the one, respectively equal to the two sides BA, AF and the angle BAF in the other (I. 4).

Similarly the two triangles EAC, BCF are equal (I. 4).

Next prove that DG is parallel to BC, and that AG = GB.

This follows since the triangles GDA, GDB are equal in every respect (I. 4).

Similarly EH is parallel to AB, and BH = HC (I. 4).

Hence the triangles BCD, BCG are equal in area (I. 37), and triangles GBC, GAC are equal in area (I. 38).

Hence triangle DBC = $\frac{1}{2}$BAC in area.

Similarly EBA = $\frac{1}{2}$BAC in area.

Summing up, we get—

$$\begin{aligned} \text{ADB} + \text{BEC} &= \text{DACEB} - \text{BAC} \\ &= \text{DAC} + \text{DBC} + \text{EAC} + \text{EAB} - 2\text{BAC} \\ &= \text{BAF} + \tfrac{1}{2}\text{BAC} + \text{BCF} + \tfrac{1}{2}\text{BAC} - 2\text{BAC} \\ &= \text{BAF} + \text{BCF} - \text{BAC} \\ &= \overline{\text{ACF}}. \end{aligned}$$

The fact that $\overline{\text{AE}}$, BF, CD meet in a point need not be proved, as it is not required in the proof given.

J. Calver.—(*a*) PNP′ is a double ordinate of the parabola. Through Q, another point on the parabola, straight lines are drawn, one passing through the vertex and the other parallel to the axis cutting PP′ in L and L′. Show that NL, NL′ = PN² (N being the point where the double ordinate PP′ cuts the axis).

(*b*) From S focus a line SQ is drawn parallel to the tangent at P, meeting PE, which is parallel to the axis at E. Show that the locus of E is a parabola vertex S, and latus rectum = $\frac{1}{4}$ that of original parabola. (Riders in *Geometrical Treatise on Conics*, by Cockshott and Walters.)

(*a*) Let M be the foot of perpendicular let fall from Q on to the axis. Then since P and Q are on the parabola,

$$\text{PN}^2 = \text{AN} \times \text{const.}, \text{ where A is the vertex.}$$
$$\text{QM}^2 = \text{AM} \times \text{same const.}$$
$$\text{Hence NL}'^2 = \text{AM} \times \text{same const.}$$
$$\therefore \frac{\text{PN}^2}{\text{NL}'^2} = \frac{\text{AN}}{\text{AM}} = \frac{\text{NL}}{\text{QM}} = \frac{\text{NL}}{\text{NL}'}.$$
$$\therefore \text{PN}^2 = \frac{\text{NL} \times \text{NL}'^2}{\text{NL}'} = \text{NL} \times \text{NL}'.$$

(*b*) Let N and M be the feet of perpendiculars from P and E drawn to the axis; also let T be the point in which the tangent at P meets the axis.

Then $\text{PN}^2 = 4\text{AS} \cdot \text{AN}$, where A is the vertex.

$$\therefore \text{EM}^2 = 4\text{AS} \cdot \text{AN}.$$
$$\therefore \text{EM}^2 = 4\text{AS} \cdot \frac{\text{TN}}{2} \text{ (from well-known tangent property)}$$
$$= \frac{4\text{AS}}{2} \cdot \text{SM, since } \triangle\text{s PTN, ESM are equal.}$$

Therefore E is on a parabola, with S as focus, and a latus rectum equal to half that of given parabola.

Alleyn.—If x_1y_1, x_2y_2, x_3y_3 be the co-ordinates of three points not in one straight line, show that the co-ordinates of any other point can always be expressed in the form $lx_1 + mx_2 + nx_3$, $ly_1 + my_2 + ny_3$, where $l + m + n = 1$.

(Cambridge Higher Local.)

Please verify that this is correctly stated, and state the source from which it is taken. It would appear doubtful that $l + m + n = 1$.

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(St. Andrews Prelim., 1893.)

Let x = rate of walking,
y = rate of stream,
z = rate of rowing in still water.

Then

$$\frac{16}{x} + \frac{16}{y+z} = 6. \quad \ldots\ldots\ldots \quad (1)$$

$$\frac{16}{x} + \frac{16}{z-y} = 8. \quad \ldots\ldots\ldots \quad (2)$$

$$\frac{16}{x} + \frac{16}{z} = 6\tfrac{2}{3}. \quad \ldots\ldots\ldots \quad (3)$$

(2) − (1) gives

$$\frac{16}{z-y} - \frac{16}{z+y} = 2,$$

$$16(z+y-z+y) = z(z^2-y^2),$$

$$16y = z^2 - y^2. \quad \ldots\ldots\ldots \quad (4)$$

(2) − (3) gives

$$\frac{16}{z-y} - \frac{16}{z} = 1\tfrac{1}{3},$$

$$16(z-z+y) = \tfrac{4}{3}(z-y)z,$$

$$16y = \tfrac{4}{3}z(z-y),$$

$$48y = 4z(z-y). \quad \ldots\ldots \quad (5)$$

(4) gives $48y = 3z^2 - 3y^2$. $\ldots\ldots \quad (6)$

(6) − (5) gives $0 = z^2 - 4zy + 3y^2$,

$$0 = (z-3y)(z-y),$$

$$\therefore z = 3y \text{ or } y. \quad \ldots\ldots \quad (7)$$

Substituting from (7) into (4), $(z = 3y)$.

$$16y = 9y^2 - y^2.$$

$$\therefore y = 2 \text{ or } 0.$$

Or, $(z = y)$. $16y = y^2 - y^2$.

$$y = 0.$$

Ans. 2 miles an hour.

J. Dier.—If $a + b + c = 0$, show that

$$\frac{a^2}{2a^2+bc} + \frac{b^2}{2b^2+ca} + \frac{c^2}{2c^2+ab} = 1.$$

(Hall and Knight, p. 216.)

$$\frac{a^2}{2a^2+bc} = \frac{a^2}{2a^2+b(-a-b)}$$

$$= \frac{a^2}{a^2+a^2-ab-b^2}$$

$$= \frac{a^2}{a^2-b^2+a^2-ab}$$

$$= \frac{a^2}{(a-b)(a+b)+a(a-b)}$$

$$= \frac{a^2}{(a-b)(2a+b)} = \frac{a^2}{(a-b)(a-c)}.$$

Similarly,

$$\frac{b^2}{2b^2+ca} = \frac{b^2}{(b-c)(b-a)},$$

$$\frac{c^2}{2c^2+ab} = \frac{c^2}{(c-a)(c-b)}.$$

Hence,

$$\frac{a^2}{2a^2+bc} + \frac{b^2}{2b^2+ca} + \frac{c^2}{2c^2+ab}$$

$$= \frac{a^2}{(a-b)(a-c)} + \frac{b^2}{(b-c)(b-a)} + \frac{c^2}{(c-a)(c-b)}$$

$$= \frac{a^2(c-b) + b^2(a-c) + c^2(b-a)}{(a-b)(b-c)(c-a)}$$

$$= \frac{a^2c - a^2b + ab^2 - b^2c + bc^2 - ac^2}{(a-b)(b-c)(c-a)}$$

$$= \frac{(a-b)(b-c)(c-a)}{(a-b)(b-c)(c-a)}$$

$$= 1.$$

Ignoramus.—A merchant bought a number of eggs, of which 25 per cent. were broken in transit, and the remainder were sold at 1s. 4d. per dozen; the expenses were 10 per cent. of the receipts, and the net gain in the transaction £5. He calculated, if 10 per cent. of the eggs had been broken, and his expenses had been $16\frac{2}{3}$ per cent. of his receipts, his profit would have been $33\frac{1}{3}$ per cent. How many eggs were bought, and what sum did they cost?

(Oxford Local, 1896, Seniors.)

Let x = number of eggs sold,
y = price, in pence, per dozen.

He has $\frac{75}{100}x$ or $\frac{3}{4}x$ eggs to sell.

At 1s. 4d. a dozen, these fetch $\frac{3x}{4} \cdot \frac{1}{12} \cdot 16$, or x pence.

Deducting 10 per cent. from this, we get $\frac{9}{10}x$.

Original outlay $= \frac{xy}{12}$.

$$\therefore \text{ profit} = \frac{9}{10}x - \frac{xy}{12}.$$

$$\frac{9x}{10} - \frac{xy}{12} = 5 \times 240 = 1200.$$

$$108x - 10xy = 144000. \quad \ldots\ldots\ldots \quad (1)$$

Again, he has $\frac{9}{10}x$ to sell, and these fetch $\frac{9}{10}x \cdot \frac{16}{12}$ pence.

Deducting $16\frac{2}{3}$ per cent., or $\frac{1}{6}$, for expenses,

Net receipts $= \frac{5}{6} \cdot \frac{9x}{10} \cdot \frac{16}{12} = x$.

$$\therefore \text{ profit} = \frac{xy}{12} - x.$$

But profit $= \frac{33\frac{1}{3}}{100}$ of $\frac{xy}{12} = \frac{xy}{36}$.

$$\therefore x - \frac{xy}{12} = \frac{xy}{36}.$$

$$36x - 3xy = xy.$$

$$36x = 4xy.$$

$$y = 9. \quad \ldots\ldots\ldots \quad (2)$$

From (1) and (2),

$$108x - 90x = 144000.$$

$$18x = 144000.$$

$$x = 8000.$$

Total outlay $= \frac{8000}{12} \times 9 = 6000$ pence $= £25$.

Ans. 8000 eggs; £25.

Ralpho.—Two square tablecloths are made of the same material, and edged with the same fringe; their edges are 2 and $2\frac{1}{2}$ yards respectively, and their prices 24s. and 35s. respectively. Find the cost of the material per square yard, and that of the fringe per lineal yard.

(Dundee Bursary Competition, 1900.)

This appears to be a straightforward problem.
Let x shillings = price per square yard of material,
y shillings = price per lineal yard of fringe.

Then $2^2x + 4 \times 2y = 24$,
and $(2\frac{1}{2})^2x + 4 \times 2\frac{1}{2}y = 35$;
that is, $4x + 8y = 24$,
$6\frac{1}{4}x + 10y = 35$,
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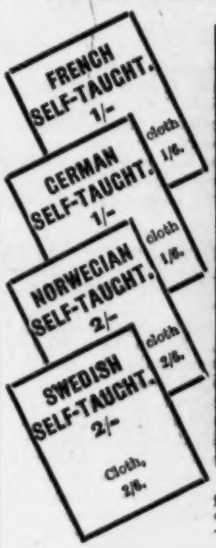

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2. Competitors should cut out and send the Coupon which appears on the Back Wrapper page of the current number.
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Disqualified.—Rule 2: Vwretter Post.

Report.

It has not been an easy matter this time to award the prize. Usually there is a fair number of competitors who combine accuracy of translation with some amount of ease and style in their renderings, but there is hardly a single translation this time which is quite accurate. The phrase "attractive power," used by the successful competitor, is hardly a satisfactory rendering of *pouvoir fluidique*, which might better be translated as "magnetic power." The vast number of mistakes in words and phrases points again to lack of reading. The majority of the competitors were not aware that *garçon* meant here "bachelor," though several were aware of its use as "waiter," and translated it as such. Only a very few indeed were acquainted with the imperative force of *tu ne feras pas cela*, etc. *C'était un ordre*, which follows, should have proved a key to the meaning, if they had not already felt that *feras, mourras, auras* could not be merely futures. Among the many humorous mistakes I have marked, "in his state of married bondage," as a translation of *dans son état de moribondage*, is certainly worthy of note.

French Prize Translation.

Never did Henri Heine dream of hastening his end—of voluntarily separating himself from his wife. Had she not want of him? Was he not her protector? This *rôle* pleased him particularly: whilst Madame Heine busied herself with her flowers or her parrot, he, dying though he was, managed, settled, and paid all the expenses. Having in his bachelorhood incurred some debts, which were paid by his uncle Heine, the rich Hamburg banker, he became after his marriage exceedingly particular to make receipts and expenses agree. We have already mentioned the protective spirit with which he was wont to surround his wife. But it must be said that he was proud to submit to the magnetic influence of his Juliette—an influence so great, he would aver, that the sound of *that* voice, the touch of that hand, had more than once made him cling to life. In support of this attractive power, the anecdote of the parrot must be cited. This takes place exactly towards the close of Heine's life. Seized in the middle of the night by one of those deadly crises which this time would have justified the belief that it was the last, his wife, fear-stricken, hastened to him; she grasped his hand, pressed it, warmed it, caressed it. She wept bitterly, and in a choking voice, through her tears, he heard her murmur: "No, no, Henri, you shall not do that—you shall not die! Have pity! I have already lost my parrot this morning, and should you die I should be so unhappy!" "That was a command," he added. "I obeyed, and continued to live. You see, my friend, when good reasons are given me—" The relation of this anecdote afforded the invalid exceeding amusement; he repeated it complaisantly, imitating the moved tones of Madame Heine, and laying emphasis upon the word *parrot*. It was characteristic of the humorous nature of the poet to be deeply touched at the pain he occasioned, and exceedingly amused at the risible form the despair assumed.

R. H.

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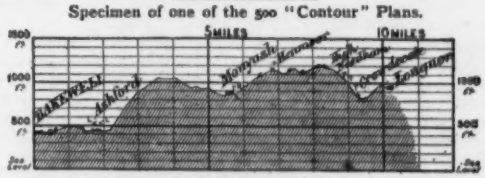

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discussion is always bright and clear; and, as one might expect from the writer, who is the author of numerous biological works, the scientist always succeeds in turning the flank or storming the defences of the ecclesiastic. Truth to tell, this is never difficult; one could wish for a more intelligent view of the religious standpoint, unhampered by Catholic dogma.

We submit with all humility that the writer flatters himself somewhat when he describes the discussions as *philosophiques*. His method is throughout to apply the laws of the lower grade to explain the phenomena of the higher, to which they subserve, and then ignore the residue. For example, the phenomena of life are to him merely the operations of physico-chemical laws: life is a synthesis of these laws. But the abstract term —so convenient to those who mistake science for philosophy, as witness Mill's "permanent *possibilities*"—the term *synthesis* covers something which is neither physical nor chemical. So it is with the *I* as a *synthesis* of atoms. Misled by identities, the writer fails to see differences which stare him in the face. He fails equally to satisfy reason when resolving personality into a series of cinematographic pictures appearing as continuous, and yet postulates the present as determined by the past. If a past stage affects the present, there is causal continuity, and this cannot exist between the members of a series, each of which ceases to exist before the next comes into being. Here again, in fixing attention on the discrete series of views, he postulates, without mentioning it, a permanent screen. Once more, explaining away infinity in time, he resolves it into a subjective appearance; nothing is real but molecules and their vibrations. Here also there is a concealed pitfall. He requires energy or vibration to give a rational meaning to matter; but vibration is motion, and how are we to conceive motion when time has disappeared? If time is given only in thought, motion is a merely subjective phenomenon likewise, and so all energy, and with it all matter, disappears from the realm of objective reality. This conclusion is hardly what will suit one who has already described thought as a *result* of material vibrations.

The fallacies quoted, and many others, are those of the writer's school. We may note one or two which seem more individual to him, especially as regards the existence of God. "Everything happens," he declares, "as if God did not exist." This is a mere assertion, *ex cathedra*, and we wonder the good abbé did not retort, "The fact that *anything* happens is a proof that God does exist." Again, when he complains that "the existence of God does not explain anything," it is surely fair to note that the scientific explanation of anything is merely an account of the immediately preceding state of the matter and energy in question, and that "God" does not mean a material phenomenon. Finally, the scientist's attitude to miracle is interesting. "Show me a miracle," he says, referring to some absurd test like the disappearance of his knife from a sealed bottle—"show me a miracle under conditions where my senses cannot be deceived, and I promise you I will turn monk." This is precisely what has been done by many a devotee at whom M. Fabrice Tacaud (or M. Félix le Dantec) would laugh as unscientific. *They* saw miracles where they believed it impossible that their senses could be deceived, and became monks accordingly. Or does the scientist modestly assume that *his* senses cannot be deceived? Or—worse still—is he leaving open the postern of his citadel, by reserving the right to say that since the event is contrary to physical law, his senses *must* have been deceived, and the monastery must wait for a *real* miracle to happen? Seriously, however, why should so excellent an exponent of nature's laws conceive of God as always a law-breaker, and as only manifesting His existence through interference with the course of nature?

Still, we repeat, the book is an excellent one. It is only by a writer pushing his theories to the extreme limit that their real weakness can be made manifest. Truth is thereby advanced in proportion as fallacies are laid open to the light of reason, unless the reader mistakes the author's argument against authority, and accepts the conclusions because a scientist has written them. This, we must suppose, would not be in accordance with a scientific writer's wishes; hence our brief criticism of some of his fundamental positions.

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Page 3—*acheter à vil prix.*
Page 4—*c'est une triste affaire.*
Page 9—*être dans un courant d'air.*
Page 12—*cette preuve est amenée de bien loin.*
Page 15—*selon toute apparence.*

Indeed, there is hardly a page from which at least one phrase might not have been excluded, as being quite obvious in meaning, or requiring only the slightest use of the ordinary dictionary.

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